DVP-NS400D

RMT-D128A/D128P

SERVICE MANUAL

Self Diagnosis Supported model

US Model
Canadian Model
AEP Model
UK Model
E Model
Brazil Model
Argentina Model
Mexico Model

Photo: Black type

SPECIFICATIONS

System

Laser	Semiconductor laser
Signal format system	NTSC PAL (AEP, UK)

Audio characteristics

Frequency response	DVD (PCM 96 kHz): 2 Hz to 44 kHz (±1.0 dB) DVD (PCM 48 kHz): 2 Hz to 22 kHz (±0.5 dB) CD: 2 Hz to 20 kHz (±0.5 dB)
Signal-to-noise ratio (S/N ratio)	115 dB (LINE OUT L/R (AUDIO) jacks only)
Harmonic distortion	0.003 %
Dynamic range	DVD: 103 dB CD: 99 dB
Wow and flutter	Less than detected value (± 0.001% W PEAK)

Outputs

Jack name	Jack type	Maximum output level	Load impedance
LINE OUT L/R (AUDIO)	Phono jack	2 Vrms (at 50 kilohms)	Over 10 kilohms
DIGITAL OUT (OPTICAL)	Optical output jack	-18 dBm	Wave length: 660 nm
DIGITAL OUT (COAXIAL)	Phono jack	0.5 V_{P-P}	75 ohms terminated
LINE OUT (VIDEO)	Phono jack	1.0 V_{P-P}	75 ohms, sync negative
S VIDEO OUT	4-pin mini DIN	Luminance signal: 1.0 V_{P-P} Color signal: 0.286 V_{P-P} (NTSC) 0.3 V_{P-P} (PAL)	75 ohms, sync negative 75 ohms terminated
COMPONENT VIDEO OUT(Y, P_B, P_R) (US, CND, E, MX, AR, BR)	Phono jack	Y: 1.0 V_{P-P} P_B, P_R: 0.7 V_{P-P}	75 ohms, sync negative 75 ohms
5.1CH OUTPUT	Phono jack	2 Vrms (at 50 kilohms)	Over 10 kilohms

General

Power requirements	120 V AC, 60 Hz (US, CND, MX) 110 to 240 V AC, 50/60 Hz (E, BR) 220 to 240 V AC, 50/60 Hz (AEP, UK, AR)
Power consumption	13 W (US, CND, E, MX, AR, BR) 14 W (AEP, UK)
Dimensions (approx.)	430 × 74 × 256 mm (17 × 3 × 10 1/8 in.) (w/h/d) incl. projecting parts
Mass (approx.)	2.7 kg (5lb)
Operating temperature	5 °C to 35 °C (41 °F to 95 °F)
Operating humidity	25 % to 80 %

Supplied accessories

- Audio/video cord (pinplug × 3 ←→ pinplug × 3) (1)
- Remote commander (remote) RMT-D128A (1) (US, CND, E, MX, AR, BR)
  RMT-D128P (1) (AEP, UK)
- Size AA (R6) batteries (2)

Specifications and design are subject to change without notice.

- Abbreviation
  AR : Argentina
  BR : Brazilian
  CND : Canadian
  MX : Mexican

DVD VIDEO

COMPACT disc DIGITAL VIDEO

CD/DVD PLAYER

SONY®

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

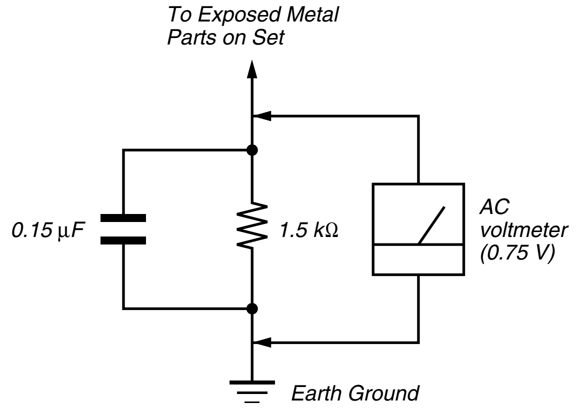
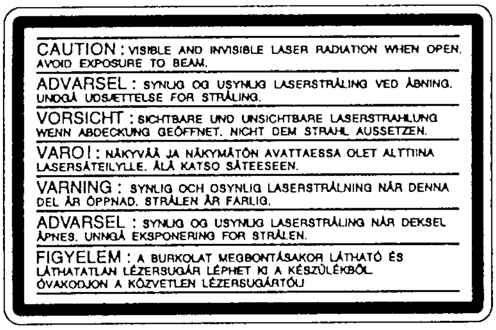


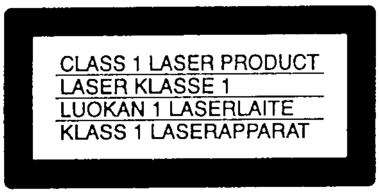
Fig. A. Using an AC voltmeter to check AC leakage.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)





CLASS 3B LASER
LUOKAN 3B LASER
LASERKLASS 3B

WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 25 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

CAUTION:
The use of optical instrument with this product will increase eye hazard.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

TABLE OF CONTENTS

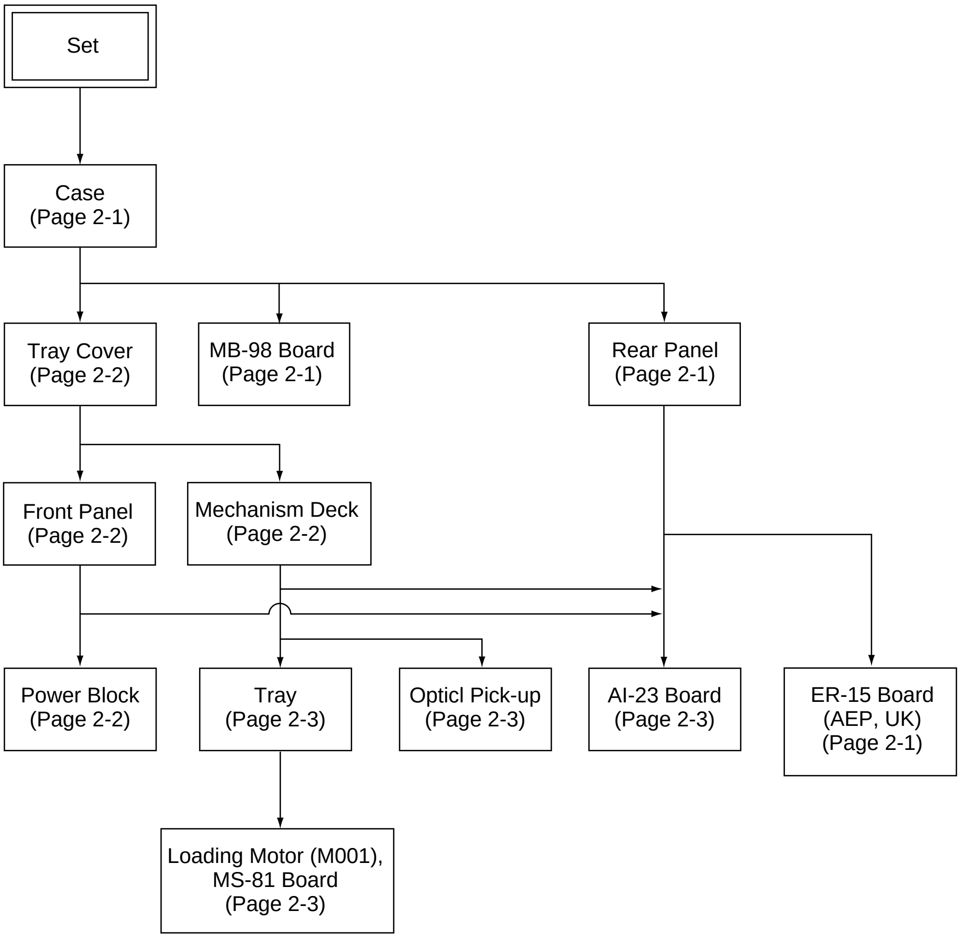
Section	Title	Page
	Service Note	4
1.	GENERAL	
	Getting Started	1-3
	Hookups	1-3
	Playing Discs	1-7
	Searching for a Scene	1-9
	Viewing Information About the Disc	1-10
	Sound Adjustments	1-11
	Enjoying Movies	1-13
	Using Various Additional Functions	1-14
	Settings and Adjustments	1-15
	Additional Information	1-18
2.	DISASSEMBLY	
2-1.	Case Removal	2-1
2-2.	MB-98 Board Removal	2-1
2-3.	Rear Panel Removal (Except AEP, UK)	2-1
2-4.	Rear Panel, ER-15 Board Removal (AEP, UK)	2-1
2-5.	Tray Cover Removal	2-2
2-6.	Front Panel Removal	2-2
2-7.	Power Block Removal	2-2
2-8.	Mechanism Deck Removal	2-2
2-9.	AI-23 Board Removal	2-3
2-10.	Tray Removal	2-3
2-11.	Loading Motor (M001), MS-81 Board Removal	2-3
2-12.	Optical Pick-up Removal	2-3
2-13.	Internal Views	2-4
2-14.	Circuit Boards Location	2-5
3.	BLOCK DIAGRAMS	
3-1.	Overall Block Diagram	3-1
3-2.	RF/Servo Block Diagram	3-3
3-3.	Signal Processor Block Diagram	3-5
3-4.	System Control Block Diagram	3-7
3-5.	Video Block Diagram	3-9
3-6.	Audio Block Diagram	3-11
3-7.	Interface Control Block Diagram	3-13
3-8.	Power 1 Block Diagram	3-15
3-9.	Power 2 Block Diagram	3-17
3-10.	Power 3 Block Diagram	3-19
4.	PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS	
4-1.	Frame Schematic Diagram	4-3
4-2.	Printed Wiring Boards and Schematic Diagrams	4-5
	MS-81 (LOADING) Printed Wiring Board and Schematic Diagram	4-5
	MB-98 Printed Wiring Board	4-7
	MB-98 (RF AMP, SERVO) Schematic Diagram	4-11
	MB-98 (ARP, SERVO DSP) Schematic Diagram	4-13
	MB-98 (AV DECODER) Schematic Diagram	4-15
	MB-98 (BNR) Schematic Diagram	4-17
	MB-98 (DRIVE) Schematic Diagram	4-19
	MB-98 (SYSTEM CONTROL) Schematic Diagram	4-21
	MB-98 (CLOCK GENERATOR) Schematic Diagram	4-23
	MB-98 (AUDIO DSP) Schematic Diagram	4-25
	MB-98 (D/A CONVERTER) Schematic Diagram	4-27
	AI-23 Printed Wiring Board	4-29
	AI-23 (VIDEO BUFFER) Schematic Diagram	4-31
	AI-23 (AUDIO AMP) Schematic Diagram	4-33
	AI-23 (5.1CH AUDIO AMP) Schematic Diagram	4-35
	AI-23 (IF CON) Schematic Diagram	4-37
	ER-15 Printed Wiring Board (AEP, UK)	4-39
	ER-15 (EURO AV) Schematic Diagram (AEP, UK)	4-41
	HS13S0E Printed Wiring Board (AEP, UK, AR)	4-43
	HS13S0E Schematic Diagram (AEP, UK, AR)	4-45
	HS13S0F Printed Wiring Board (E, BR)	4-47
	HS13S0F Schematic Diagram (E, BR)	4-49
	HS13S0U Printed Wiring Board (US, CND, MX)	4-51
	HS13S0U Schematic Diagram (US, CND, MX)	4-53
	TOP-244U Printed Wiring Board (US, CND)	4-55
	TOP-244U Schematic Diagram (US, CND)	4-57
5.	IC PIN FUNCTION DESCRIPTION	
5-1.	System Control Pin Function (MB-98 Board IC103)	5-1
6.	TEST MODE	
6-1.	General Description	6-1
6-2.	Starting Test Mode	6-1
6-3.	Syscon Diagnosis	6-1
6-4.	Drive Auto Adjustment	6-5
6-5.	Drive Manual Operation	6-7
6-6.	Mecha Aging	6-10
6-7.	Emergency History	6-10
6-8.	Version Information	6-11
6-9.	Video Level Adjustment	6-11
6-10.	IF Con Self Diagnostic Function	6-11
6-11.	Troubleshooting	6-18
7.	ELECTRICAL ADJUSTMENT	
7-1.	Power Supply Check	7-1
1.	HS13S0E/HS13S0F/HS13S0U/TOP-244U Boards	7-1
7-2.	Adjustment of Video System	7-2
1.	Video Level Adjustment	7-2
2.	Checking S Video Output S-Y	7-2
3.	Checking S Video Output S-C	7-2
4.	Checking Component Video Output Y	7-2
5.	Checking Component Video Output B-Y	7-3
6.	Checking Component Video Output R-Y	7-3
7.	Checking RGB Output R	7-3
8.	Checking RGB Output G	7-3
9.	Checking RGB Output B	7-4
7-3.	Adjustment Related Parts Arrangement	7-6
8.	REPAIR PARTS LIST	
8-1.	Exploded Views	8-1
8-1-1.	Case Assembly	8-1
8-1-2.	Chassis Assembly	8-3
8-1-3.	Mechanism Deck Assembly	8-5
8-2.	Electrical Parts List	8-6

- Abbreviation
  - AR : Argentina
  - BR : Brazilian
  - CND : Canadian
  - MX : Mexican

SERVICE NOTE

1. DISASSEMBLY

• This set can be disassembled in the order shown below.



2. DISC REMOVAL PROCEDURE (at POWER OFF)

1) Insert a tapering driver into the aperture of the unit bottom, and move the lever of chuck cam in the direction of the arrow Ⓐ. (See Fig. 1)
2) Draw out the tray in the direction of the arrow Ⓑ, and remove a disc. (See Fig. 1)

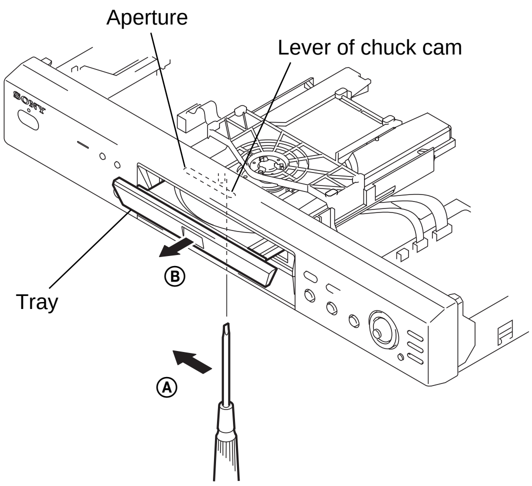
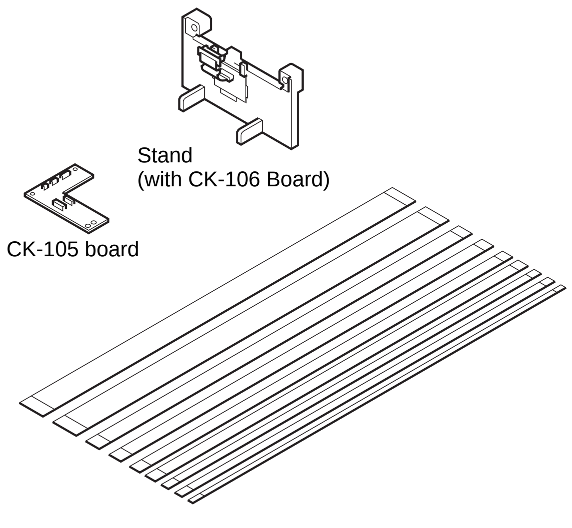


Fig. 1

3. HOW TO SERVICE MB-98 BOARD

• Jig (J-6090-107-A) Extension cable



Nine flexible flat cables

FFC 5P (EXCEPT DVP-NC600), FFC 9P,
FFC 15P, FFC26P,
FFC 9P (DVP-NS500P/NS700P),
FFC 15P (DVP-NS400D),
FFC 25P (EXCEPT DVP-NS300 J model),
FFC 29P (DVP-NS300 J model)

1) Remove the case from the set. (Refer to 2-1)
2) Remove the MB-98 board. (Refer to 2-1)
3) Set the stand (with CK-106 board) as shown in Fig. 2.

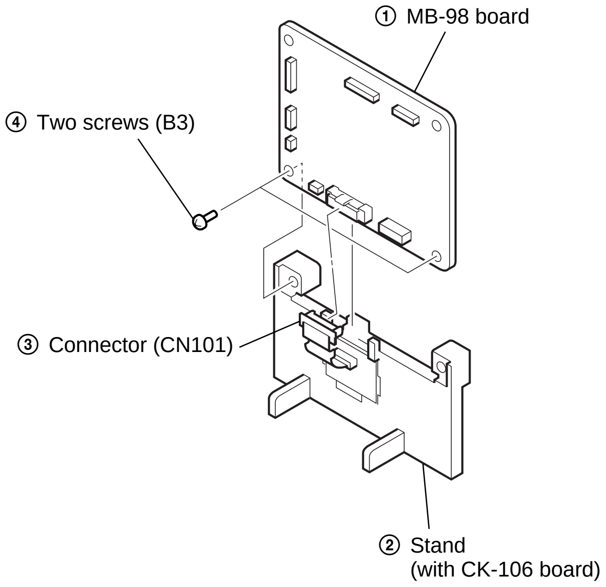


Fig. 2

4) Set the Jig A board as shown in Fig. 3.

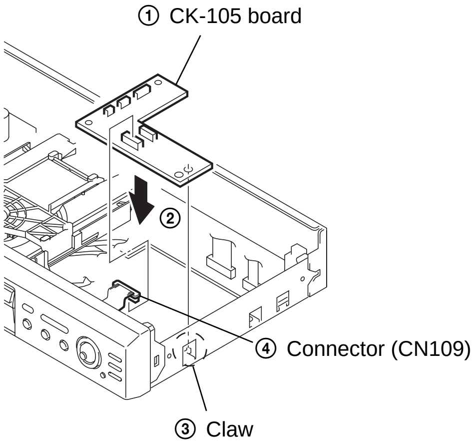


Fig. 3

5) Set the four flexible flat cables as shown in Fig. 4.

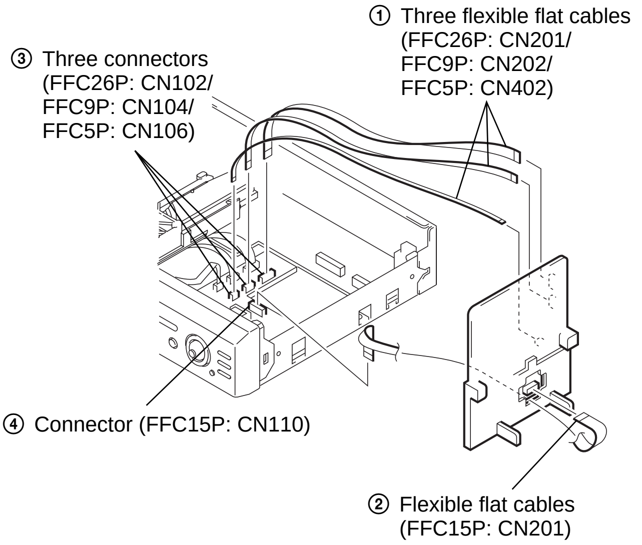


Fig. 4

6) Set the MB-98 board as shown in Fig. 5, Fig.6.

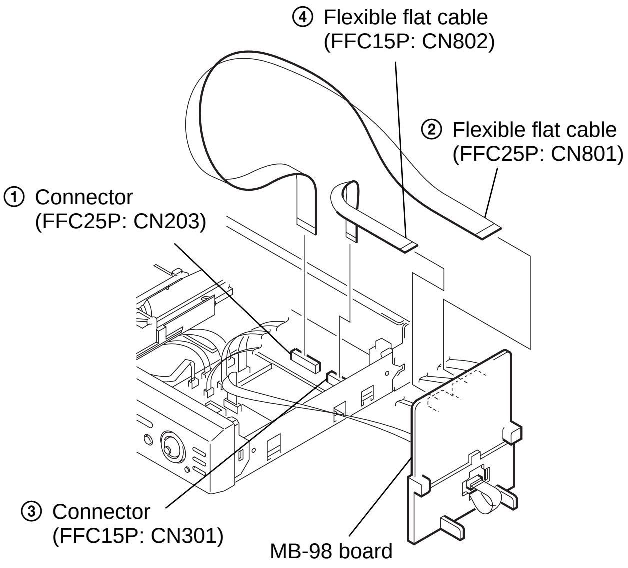


Fig. 5

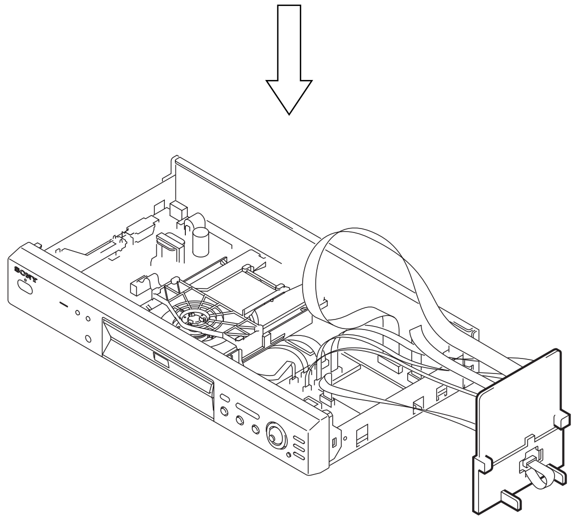


Fig. 6

4. HOW TO DISCRIMINATE MODEL TYPES IN AEP MODEL

1) Start up the test mode, display “Test Mode Menu” as shown below on the monitor, and confirm the model name.

```
          Test Mode Menu

0. Syscon Diagnosis
1. Drive Auto Adjustment
2. Drive Manual Operation
3. Mecha Aging
4. Emergency History
5. Version Information
6. Video Level Adjustment
                Exit: POWER Key
_
Model  : DPX-14xxxx
Revision : 1.xxxx  Last Off: xx
```

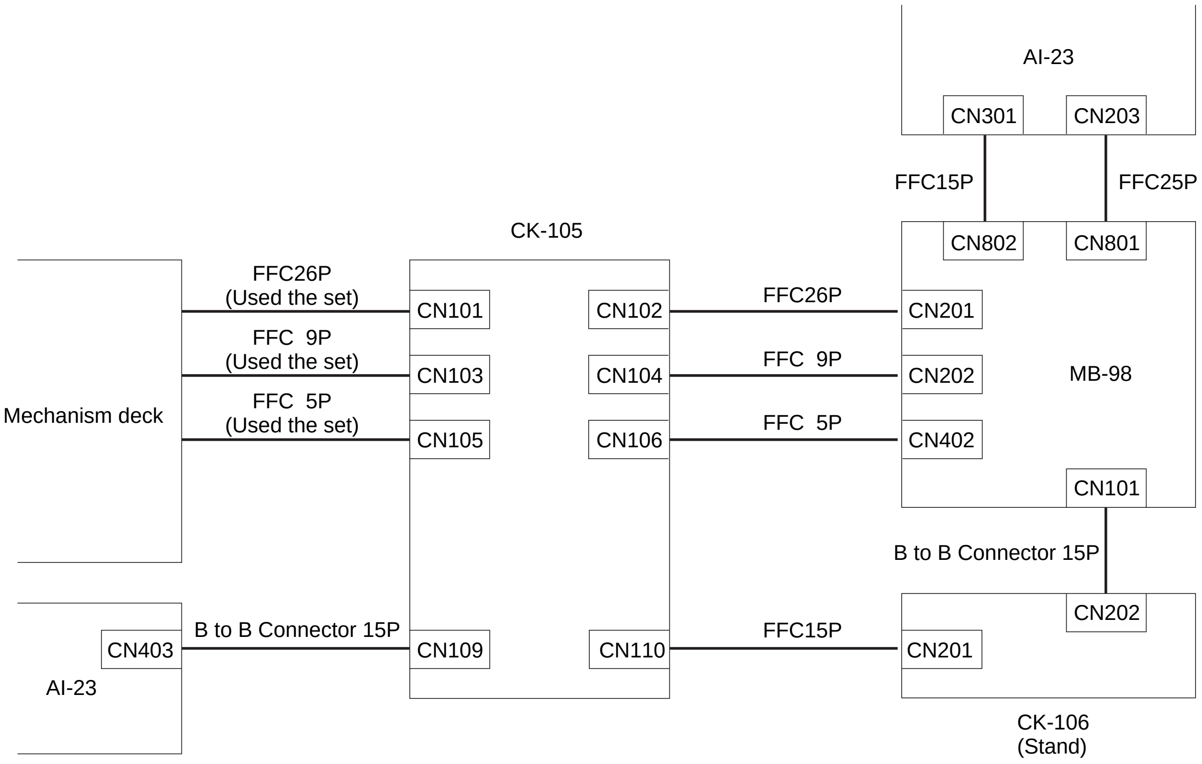
Model Display

2) Confirm the model type with the menu “2-4 Model Type” in the test mode, then discriminate the model with referring the table shown below.
(Refer to page 6-2 to confirm “2-4 Model Type”)

	Model Type		Model Display
AEP (DPX1411BM)	1	3	DPX-1411CE
AEP (DPX1411HM)	1	3	DPX-1411CE
AEP (DPX1412BM)	1	4	DPX-1412CE
AEP (DPX1412HM)	1	4	DPX-1412CE

- Description about model name
  DPX14xxBM
  Color of set
  B : Black
  H : Titanium gray

5. CONNECTION OF SERVICE JIG



SECTION 1
GENERAL

This section is extracted from instruction manual (3-067-120-11).

About this Manual

- Instructions in this manual describe the controls on the remote. You can also use the controls on the player if they have the same or similar names as those on the remote.
- The meaning of the icons used in this manual is described below:

Icon	Meaning	Icon	Meaning
DVD	Functions available in DVD video mode	CD	Functions available in music CD mode
VIDEO CD	Functions available in VIDEO CD mode	(tip icon)	More convenient features

This Player Can Play the Following Discs

Format of discs	
DVD VIDEO	DVD VIDEO
VIDEO CD	COMPACT disc DIGITAL VIDEO
Music CD	COMPACT disc DIGITAL AUDIO

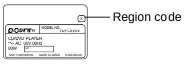
The "DVD VIDEO" logo is a trademark.

Region code

Your player has a region code printed on the back of the unit and will only play DVDs labeled with identical region codes.

DVDs labeled (ALL) will also play on this player.

If you try to play any other DVD, the message "Playback prohibited by area limitations." will appear on the TV screen. Depending on the DVD, no region code indication may be labeled even though playing the DVD is prohibited by area restrictions.



Example of discs that the player cannot play

The player cannot play the following discs:
- CD-ROMs (PHOTO CDs included)
- All CD-Rs other than music and VCD format CD-Rs
- Data part of CD-Extras
- DVD-ROMs
- DVD Audio discs
- HD layer on SACDs

Also, the player cannot play the following discs:
- A DVD with a different region code (page 79).
- A disc recorded in a color system other than NTSC, such as PAL or SECAM (This player conforms to the NTSC color system).
- A disc that has a non-standard shape (e.g., card, heart)
- A disc with paper or stickers on it.
- A disc that has the adhesive of cellophane tape or a sticker still left on it.

Note

Some CD-Rs or CD-RWs cannot be played on this player depending upon the recording quality or physical condition of the disc, or the characteristics of the recording device.
Furthermore, the disc will not play if it has not been correctly finalized. For more information, see the operating instructions for the recording device.

Note on playback operations of DVDs and VIDEO CDs.

Some playback operations of DVDs and VIDEO CDs may be intentionally set by software producers. Since this player plays DVDs and VIDEO CDs according to the disc contents the software producers designed, some playback features may not be available. Also, refer to the instructions supplied with the DVDs or VIDEO CDs.

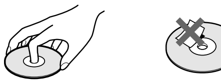
Copyrights

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents, other intellectual property rights owned by Macrovision Corporation, and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

Notes about the Discs

On handling discs

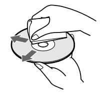
- To keep the disc clean, handle the disc by its edge. Do not touch the surface.



- Do not expose the disc to direct sunlight or heat sources such as hot air ducts, or leave it in a car parked in direct sunlight as the temperature may rise considerably inside the car.
- After playing, store the disc in its case.

On cleaning

- Before playing, clean the disc with a cleaning cloth.
  Wipe the disc from the centre out.

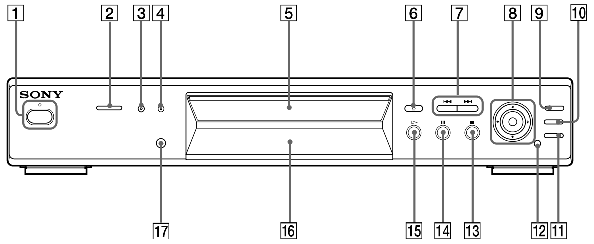


- Do not use solvents such as benzine, thinner, commercially available cleaners, or anti-static spray intended for vinyl LPs.

Index to Parts and Controls

For more information, refer to the pages indicated in parentheses.

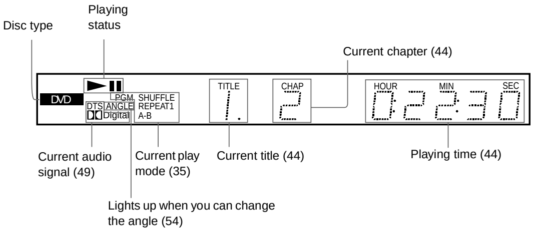
Front Panel



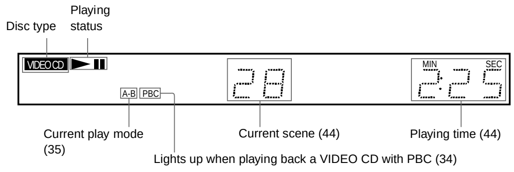
1. POWER switch/indicator (30)
2. DOLBY DIGITAL indicator
   Lights up when:
   - playing back a Dolby Digital soundtrack on the DVD
   - the disc is not inserted
3. BNR (Block Noise Reduction) button/indicator (56)
4. SURROUND button/indicator (50)
5. Disc tray (30)
6. ⏏ (open/close) button (30)
7. ⏮/⏭ (previous/next) buttons (31)
8. ←/↑/↓/→/ ENTER buttons (25)
9. TITLE button (33)
10. DVD MENU button (33)
11. RETURN button (34)
12. DISPLAY button (12)
13. ■ (stop) button (30)
14. ❚❚ (pause) button (31, 62)
15. ▷ (play) button (30)
16. Front panel display (9)
17. (remote sensor) (14)

Front Panel Display

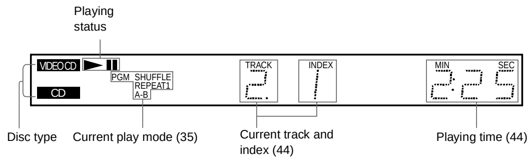
When playing back a DVD



When playing back a VIDEO CD (PBC)

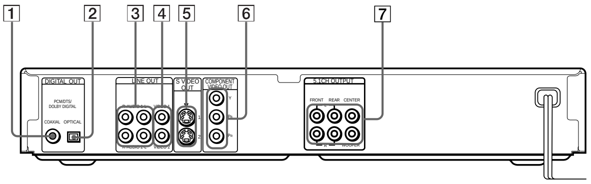


When playing back a CD or VIDEO CD (without PBC)



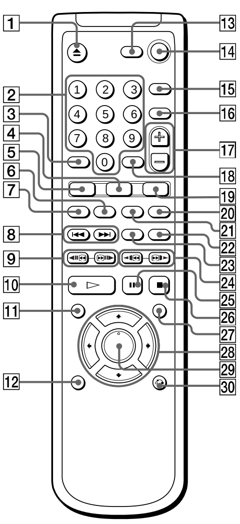
continued

Rear Panel



1 DIGITAL OUT (COAXIAL) jack (21, 23, 24)
2 DIGITAL OUT (OPTICAL) jack (21, 23, 24)
3 LINE OUT L/R (AUDIO) 1/2 jacks (15, 20, 23, 24)
4 LINE OUT (VIDEO) 1/2 jacks (17)
5 S VIDEO OUT 1/2 jacks (17)
6 COMPONENT VIDEO OUT jacks (17)
7 5.1CH OUTPUT jacks (21)

Remote

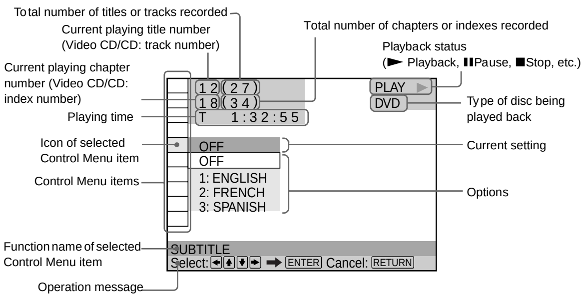


1 ≜ OPEN/CLOSE button (31)
2 Number buttons
3 CLEAR button (35)
4 ANGLE button (54)
5 AUDIO button (48)
6 PROGRAM button (35)
7 SHUFFLE button (37)
8 ⏮/⏭ PREV/NEXT buttons (31)
9 ◀II⏪/⏩II▶ SEARCH/STEP buttons (40)
10 ▷ PLAY button (30)
11 TITLE button (33)
12 DISPLAY button (35)
13 TV I/⏻ (on/standby) button (63)
14 I/⏻ (on/standby) button (30)
15 BNR (Block Noise Reduction) button (56)
16 TV/VIDEO button (63)
17 VOL +/– buttons (63)
18 ENTER button
19 SUBTITLE button (55)
20 TIME/TEXT button (44)
21 REPEAT button (37)
22 INSTANT REPLAY button (31)
23 SURROUND button (50)
24 ◀I⏪/⏩I▶ SCAN/SLOW buttons (40)
25 II PAUSE button (31)
26 ■ STOP button (30)
27 DVD MENU button (33)
28 ←/↑/↓/→ buttons (25)
29 ENTER button
30 ↶ RETURN button (34)

Guide to Control Menu Display

Use the Control Menu to select a function that you'd like to use. The Control Menu display appears when the DISPLAY button is pressed. For details, please refer to the page in parenthesizes.

Control Menu



List of Control Menu Items

TITLE (DVD only) (page 41)/ SCENE (only VIDEO CD in PBC playback) (page 41)/TRACK (VIDEO CD only) (page 41)	Selects the title (DVD), the scene (VIDEO CD in PBC playback) or the track (VIDEO CD) to be played.
CHAPTER (DVD only) (page 41)/INDEX (VIDEO CD only) (page 41)	Selects the chapter (DVD) or the index (VIDEO CD) to be played.
TRACK (CD only) (page 41)	Selects the track (CD) to be played.
INDEX (CD only) (page 41)	Selects the index (CD) to be played.
TIME/TEXT (page 44)	Check the elapsed time and the remaining playback time. Input the time code for picture and music searching. Displays the DVD or the CD text.
AUDIO (page 48)	Changes the audio setting.
SUBTITLE (DVD only) (page 55)	Displays the subtitles. Changes the subtitle language.
ANGLE (DVD only) (page 54)	Changes the angle.

SURROUND (page 50)	Selects the surround functions.
ADVANCED (DVD only) (page 47)	Checks the information (bit rate or layer) on the disc while playing a DVD.
CUSTOM PARENTAL CONTROL (page 58)	Sets the disc to prohibit playing.
SETUP (page 65)	QUICK Setup (page 25) Use Quick Setup to choose the desired language of the on screen display, the shape of the TV screen, the audio output, and speakers connected to the player. CUSTOM Setup In addition to the Quick Setup setting, you can adjust the image and sound quality, Parental Control, and other various settings. RESET Returns the settings in "SETUP" to the default setting.
PROGRAM (page 35)	Selects the title, the chapter or the track to play a disc in the order you want.
SHUFFLE (page 37)	Plays the title, the chapter or the track in random order.
REPEAT (page 37)	Plays the entire disc (all titles/all tracks) repeatedly or one title/chapter/track repeatedly.
A-B REPEAT (page 38)	Specifies the parts you want to play repeatedly.
BNR (page 56)	Adjusts the picture quality by reducing the "block noise" or mosaic like patterns that appear on your TV screen.
DIGITAL VIDEO ENHANCER (page 57)	Exaggerates the outline of the image to produce a sharper picture.
VIEWER (DVD/VIDEO CD only) (page 42)	Divides the screen into 9 sub-screens to help you find the scene you want quickly.

Each time you press DISPLAY, the Control Menu display changes as follows:

→ Control Menu display 1
↓
Control Menu display 2
(The items except the first three items from the top are changed to other items.)
↓
ADVANCED display (Appears if you select any setting other than "OFF." See page 47.)
↓
Control Menu display off

You can display the Control Menu display 1 only during CD playback. The Control Menu items are different depending on the disc.

The Control Menu icon indicator lights up in green → when you select any item except "OFF." ("SURROUND," "PROGRAM," "SHUFFLE," "REPEAT," "A-B Repeat," "DIGITAL VIDEO ENHANCER" only). The "ANGLE" indicator lights up in green only when the angles can be changed.

Quick Overview

A quick overview presented in this chapter will give you enough information to start using the player for your enjoyment. To use the surround sound features of this player, refer to "Hookups" on page 17.

Note

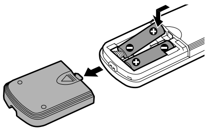
You cannot connect this player to a TV that does not have a video input jack.
Be sure to turn off the power of each component before connecting.

Step 1: Unpacking

Check that you have the following items:
- Audio/video cord (pinplug × 3 ←→ pinplug × 3) (1)
- Remote commander (remote) RMT-D128A (1)
- Size AA (R6) batteries (2)

Step 2: Inserting Batteries into the Remote

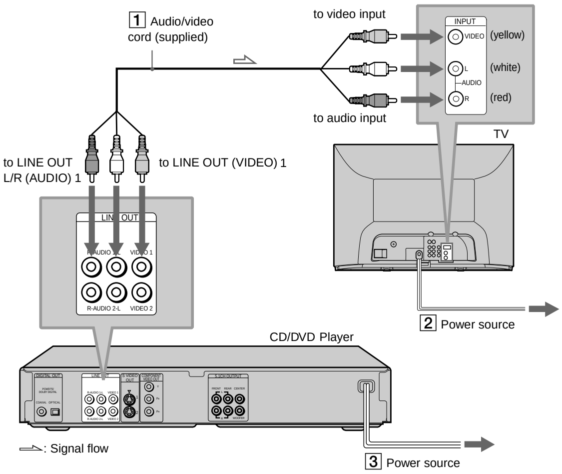
You can control the player using the supplied remote. Insert two size AA (R6) batteries by matching the ⊕ and ⊖ ends on the batteries to the markings inside the compartment. When using the remote, point it at the remote sensor on the player.



Notes
- Do not leave the remote in an extremely hot or humid place.
- Do not drop any foreign object into the remote casing, particularly when replacing the batteries.
- Do not expose the remote sensor to direct light from the sun or lighting apparatus. Doing so may cause a malfunction.
- If you do not use the remote for an extended period of time, remove the batteries to avoid possible damage from battery leakage and corrosion.

Step 3: TV Hookups

Connect the supplied audio/video cord and power cord in the order (1~3) shown below. Be sure to connect the power cord last.



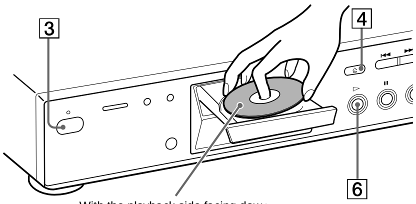
When connecting to a wide screen TV

Depending on the disc, the image may not fit your TV screen.
If you want to change the aspect ratio, please refer to page 67.

Step 4: Playing a Disc

1 **Turn on the TV.**

2 **Switch the input selector on the TV to the player.**



With the playback side facing down

3 **Press POWER on the player.**

4 **Press ≙ on the player to open the disc tray.**

5 **Place the disc on the tray with the playback side facing down.**

6 **Press ▷.**
The disc tray closes and the player begins playing the disc.

After Step 6

Depending on the disc, a menu may be displayed on the TV screen. If so, select the item you want from the menu and play the DVD (page 33) or VIDEO CD disc (page 34).

To stop playing

Press ■.

To take out the disc

Press ≙.

To turn off the player

Press I/⏻ on the remote. The player is set to standby mode and the power indicator lights up in red. Press POWER on the player to turn off completely.

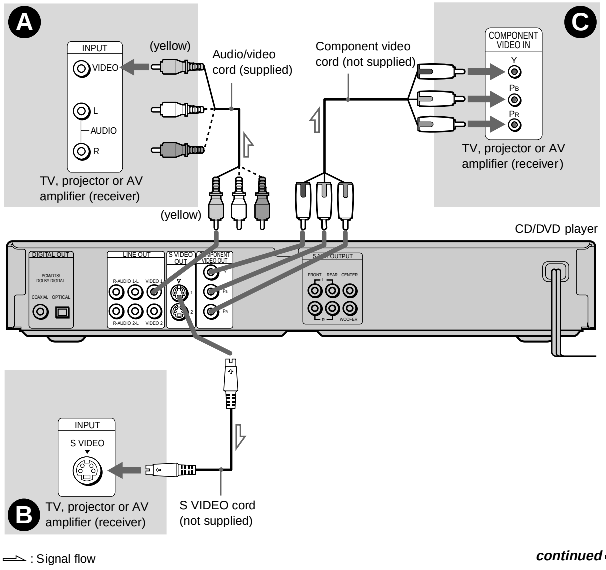
Hooking Up the Player

Follow Steps 1 to 4 to hook up and adjust the settings of the player.
Before you start, turn off the power, check that you have all of the supplied accessories, and insert the batteries into the remote (page 14).

Notes
- Plug cords securely to prevent unwanted noise.
- Refer to the instructions supplied with the components to be connected.

Step 1: Connecting the Video Cords

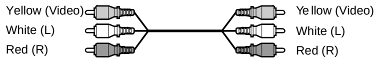
Connect this player to your TV monitor, projector or, AV amplifier (receiver) using a video cord. Select one of the patterns A through C, according to the input jack on your TV monitor, projector, or AV amplifier (receiver).



continued

A If you are connecting to a video input jack

Connect the yellow plug of the audio/video cord (supplied) to the yellow (video) jacks. You will enjoy standard quality images.



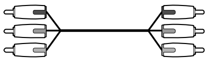
Use the red and white plugs to connect to the audio input jacks (page 20).

B If you are connecting to an S VIDEO input jack

Connect the S VIDEO cord (not supplied). You will enjoy standard quality images.

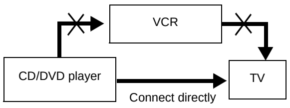
C If you are connecting to a monitor, projector or, AV amplifier (receiver) having component video input jacks (Y, P_B, P_R)

Connect the component via the COMPONENT VIDEO OUT jacks using a component video cord (not supplied) or three video cords (not supplied) of the same kind and length. You will enjoy accurate color reproduction and high quality images.



Note

Do not connect the player to a VCR so that the signals of the player are passed to the TV via the VCR. If you do so, you may not receive a clear image on the TV screen.



Step 2: Connecting the Audio Cords

Refer to the chart below to select the connection that best suits your system. The surround effects you will enjoy depend on the connections and components you use.

Hookups

Select a connection

Select one of the following connections, A through D.

Connection	Components to be connected
A (page 20)	• TV (stereo)
B (page 21)	• AV amplifier (receiver) having 5.1ch input jacks • 4 speakers (front L and R, rear L and R) • 6 speakers (front L and R, center, rear L and R, subwoofer)
B (page 21)	• AV amplifier (receiver) having a Dolby* Digital or DTS** decoder and a digital input jack • 6 speakers (front L and R, center, rear L and R, subwoofer)
C (page 23)	• Stereo amplifier (receiver) (having L and R audio input jacks only, or having a digital input jack) • 2 speakers (front L and R)
C (page 23)	• MD deck/DAT deck
D (page 24)	• AV amplifier (receiver) with a Dolby Surround (Pro Logic) decoder (having L and R audio input jacks only, or having a digital input jack) • 3 speakers (front L and R, and rear (monaural)) • 6 speakers (front L and R, center, rear L and R, subwoofer)

* Manufactured under license from Dolby Laboratories. "Dolby," "Pro Logic," and the double-D symbol are trademarks of Dolby Laboratories. Confidential unpublished works. © 1992-1997 Dolby Laboratories. All rights reserved.

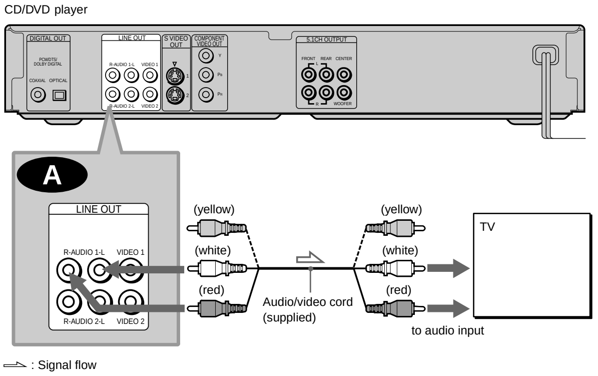
** "DTS" is a registered trademark of Digital Theater Systems, Inc.

continued

A Connecting to your TV

This connection will use your TV speakers for sound.

■ Recommended surround sound effects for this connection.
- TVS DYNAMIC (page 50)
- TVS WIDE (page 50)



The yellow plug is used for video signals (page 17).

B Connecting to an AV amplifier (having 5.1ch input jacks or a digital input jack) and 4 to 6 speakers

If your AV amplifier (receiver) has 5.1 channel inputs, use B-1.
If you want to use the Dolby Digital or DTS decorder function on your AV amplifier (receiver), connect to its digital jack using B-2. With the following connections, you can enjoy a more realistic audio presence in the comfort of your own home.

Hookups

B-1: Connecting to the 5.1ch input jacks

You can enjoy 5.1ch surround sound using the internal Dolby Digital decoder of this player. You can also enjoy Dolby Surround (Pro Logic) sounds, or surround sounds using various SURROUND modes (page 50).

■ Recommended surround sound effects for this connection.

When 6 speakers are connected.
- Dolby Digital (5.1ch) (page 79)
(Set "SURROUND" to "OFF.")

B-2: Connecting to the digital input jack

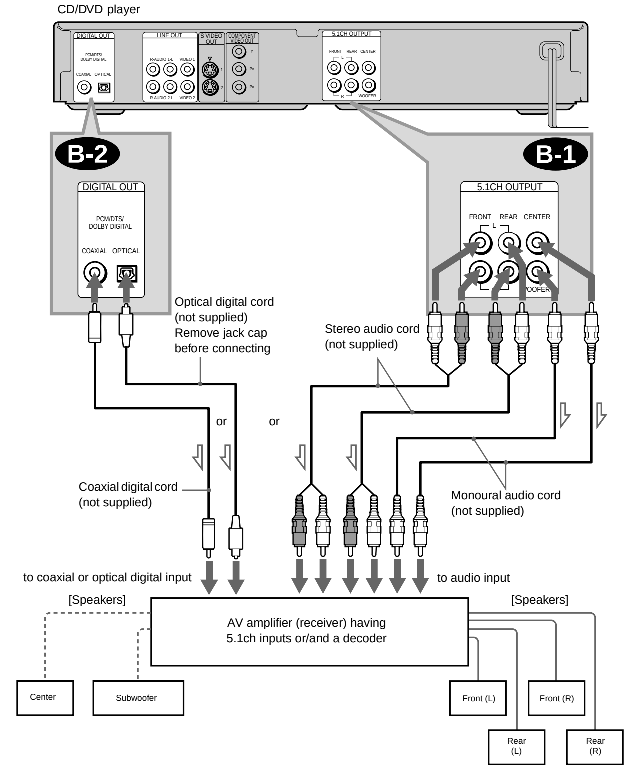
This connection will allow you to use the Dolby Digital or DTS decoder function of your AV amplifier (receiver). You are not able to enjoy the SURROUND sound effects of the player.

■ Recommended surround sound effects using this connection with your amplifier (receiver).
- Dolby Digital (5.1ch) (page 79)
- DTS (5.1ch) (page 79)

Note

After you have completed the connection, be sure to set "DOLBY DIGITAL" to "DOLBY DIGITAL" (page 27). If your AV amplifier (receiver) has a DTS decoder, set "DTS" to "ON" (page 27). Otherwise, no sound or a loud noise will come from the speakers.

continued



: Signal flow

To enhance the surround sound effects:
- Use high-performance speakers.
- Use front, rear, and center speakers having the same size and performance.
- Place a subwoofer between the right and left front speakers.
- Refer to the operating instructions of the AV receiver (amplifier) for correct speaker setting location.

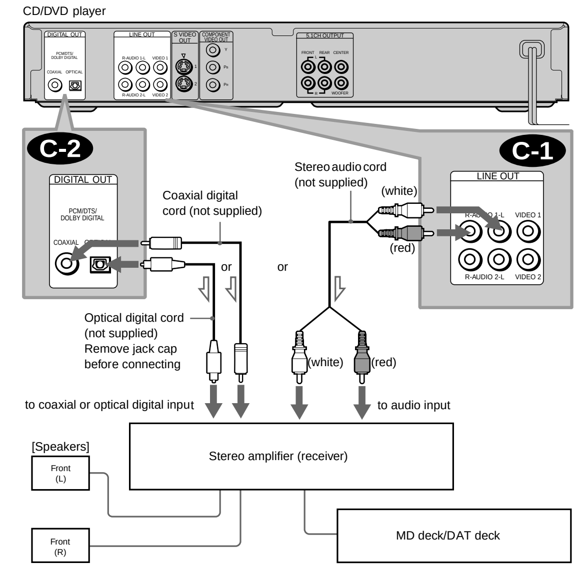
C Connecting to a stereo amplifier (receiver) and 2 speakers/Connecting to an MD deck or DAT deck

This connection will use your 2 front speakers connected to your stereo amplifier (receiver) for sound. If the stereo amplifier (receiver) has audio input jacks L and R only, use C-1. If the amplifier (receiver) has a digital input jack, use C-2. When connecting to an MD deck or a DAT deck, use C-2. In this case, you can also connect the player directly to the MD deck or DAT deck with using your stereo amplifier (receiver).

■Recommended surround sound effects for the C-1 connection only.
- TVS STANDARD (page 50)

In connection C-1, you can use the supplied audio/video cord instead of using a separate audio cord.

To realize better surround sound effects, make sure that your listening position is in between your speakers.



: Signal flow

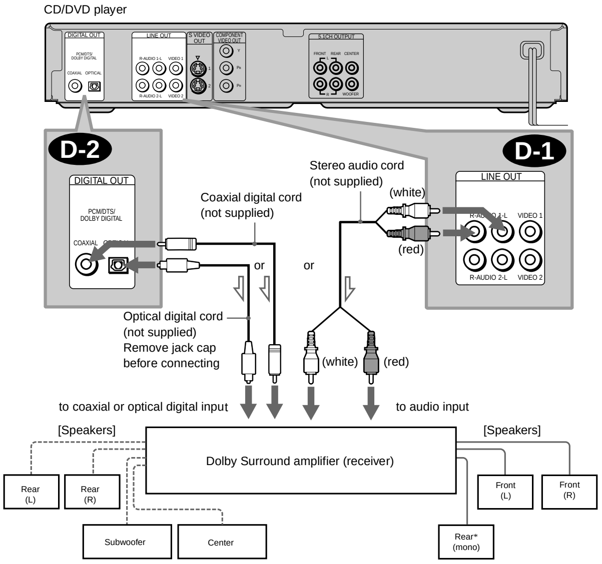
continued

D Connecting to an AV amplifier (receiver) having a Dolby Surround (Pro Logic) decoder and 3 to 6 speakers

This connection will allow you to enjoy the surround effects of the Pro Logic decoder on your amplifier (receiver). If you have an AV amplifier (receiver) equipped with a Dolby Digital or DTS decoder, refer to page 21.
You can enjoy the Dolby Surround effects only when playing Dolby Surround audio or multi-channel audio (Dolby Digital) discs.
Pro Logic uses a minimum of 3 speakers (front L and R, and rear (monaural)). The surround effects are enhanced if 6 speakers (front L and R, center, rear L and R, and subwoofer) are used. If your amplifier (receiver) has L and R audio input jacks only, use D-1. If your amplifier (receiver) has a digital input jack, use D-2.

■Recommended surround sound effects using this connection with your amplifier (receiver).
- Dolby Surround (Pro Logic) (page 79)

For correct speaker setting location, please refer to the operating instructions of the amplifier (receiver).



: Signal flow

*When connecting 6 speakers, replace the monaural rear speaker with a center speaker, 2 rear speakers and a subwoofer.

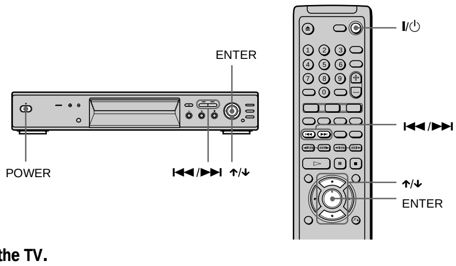
Step 3: Connecting the Power Cord

Plug the player and TV power cords into an AC outlet.

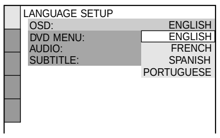
Do not connect the power cord of your player to the "switched" power socket of an amplifier (receiver). When you turn off the power of your amplifier (receiver) the menu setting for the player such as Playback Memory may be lost.

Step 4: Quick Setup

Follow the steps below to make the minimum number of base adjustments use the player. To skip an adjustment, press ▶▶I. To return to the previous adjustment, press I◀◀.



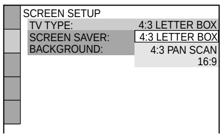
1. **Turn on the TV.**
2. **Switch the input selector on the TV to the player.**
3. **Press POWER on the player and press I/⏻ on the remote.**
   "Press [ENTER] to run QUICK SETUP" appears at the bottom of the screen. If this message does not appear, select "QUICK" under "SETUP" in the Control Menu to run Quick Setup (page 65).
4. **Press ENTER without inserting a disc.**
   The Setup Display for selecting the language used in the on-screen display appears.



continued

5 **Press ↑/↓ to select a language.**
The player uses the language selected here to display the DVD menu and subtitle as well.

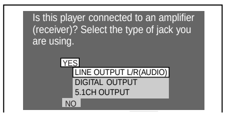
6 **Press ENTER.**
The Setup Display for selecting the aspect ratio of the TV to be connected appears.



7 **Press ↑/↓ to select the item.**

TV Type	You select	Page
4:3 standard TV	4:3 LETTER BOX or 4:3 PAN SCAN	67
A wide-screen TV or 4:3 standard TV with a wide-screen mode	16:9	67

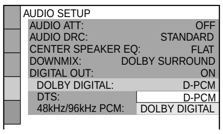
8 **Press ENTER.**
The Setup Display for selecting the type of jack used to connect your amplifier (receiver) appears.



9 **Press ↑/↓ to select the item, then press ENTER.**
- When “NO” or “LINE OUTPUT L/R (AUDIO)” is selected, Quick Setup is finished and connections are complete.
- When “DIGITAL OUTPUT” is selected, the Setup Display for “DOLBY DIGITAL” appears.
- When “5.1CH OUTPUT” is selected, the Setup Display for “SPEAKER SETUP” appears.

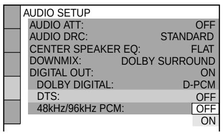
When DIGITAL OUTPUT is selected

1 Press ↑/↓ to select the item.
Choose the item that matches the audio connection you selected in page 21 to 24 (B through D).



Audio Cord Connection Type	You select	Page
C-2 D-2	D-PCM	71
B-2	DOLBY DIGITAL (only if the amplifier (receiver) has a Dolby Digital decoder)	71

2 Press ENTER.
DTS is selected.



3 Press ↑/↓ to select the item.
Choose the item that matches the audio connection you selected in page 21 to 24 (B through D).

Audio Cord Connection Type	You select	Page
C-2 D-2	OFF	71
B-2	ON (only if the amplifier (receiver) has a DTS decode	71

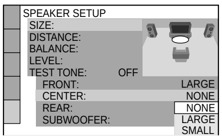
4 Press ENTER.
Quick Setup is finished. All connections and setup operations are complete.

Hookups

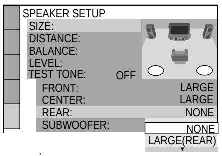
continued

When 5.1 CH OUTPUT is selected

1 Press ↑/↓ to select the size of the center speaker.
If no center speaker is connected, select “NONE.” Refer to page 72 for each selection item.

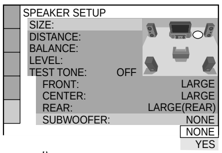


2 Press ENTER.
The Setup Display for selecting the size of the rear speaker appears.



3 Press ↑/↓ to select the size.
If no rear speaker is connected, select “NONE.”
“SIDE” and “REAR” refer to the speakers’ position relative to your listening position.
Refer to page 72 for each selection item.

4 Press ENTER.
The Setup Display for selecting whether or not you have connected a subwoofer appears.



5 Press ↑/↓ to select the item.

6 Press ENTER.
Quick Setup is finished. All connections and setup operations are complete.

Note
You can directly start Quick Setup only when you run it for the first time.
To run Quick Setup a second time, select “QUICK” under “SETUP” in the Control Menu (page 65).

Enjoying the surround sound effects

To enjoy the surround sound effects of this player or your amplifier (receiver), the following items must be set as described below for the audio connection you selected in page 21 to 24 (B through D). Each of these are the default settings and do not need to be adjusted when you first connect the player. Refer to page 65 for using the Setup Display.

Audio Connection (page 21 to 24)

A
No additional settings are needed.

B-1

Item	You select	Page
DISTANCE BALANCE LEVEL	Set according to the connected speakers	72

- If the sound distorts even when the volume is turned down, set “AUDIO ATT” to “ON” (page 70).
- If “ENHANCED” or “SOFT” is selected in “CENTER SPEAKER EQ,” it makes the spoken track sound clear (page 70).

B-2 C-2 D-2

Item	You select	Page
DOWNMIX	DOLBY SURROUND	70
DIGITAL OUT	ON	70

- Set “48kHz/96kHz PCM” to “96kHz/24bit,” only if you connect the amplifier (receiver) that conforms to the 96 kHz sampling frequency (page 71).

C-1 D-1

Item	You select	Page
DOWNMIX	DOLBY SURROUND	70

- If the sound distorts even when the volume is turned down, set “AUDIO ATT” to “ON” (page 70).

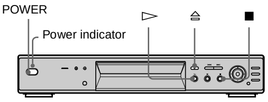
Hookups

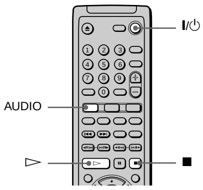
Playing Discs

DVD VIDEO CD CD

Depending on the DVD or VIDEO CD, some operations may be different or restricted.

Refer to the operating instructions supplied with your disc.





1 Turn on your TV.

2 Switch the input selector on the TV to the player.

When using an amplifier (receiver)

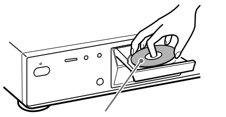
Turn on the amplifier (receiver) and select the appropriate channel.

3 Press POWER on the player.

The player enters standby mode and the power indicator lights up in red.

4 Press ⏏ on the player, and place a disc on the disc tray.

The player automatically turns on and the power indicator lights up in green.



With the playback side facing down

5 Press ▷.

The disc tray closes, and the player starts playback (continuous play). Adjust the volume on the TV or the amplifier (receiver).

After following Step 5

Depending on the disc, a menu may appear on the TV screen. You can play the disc interactively by following the instructions on the menu. DVD (page 33), VIDEO CD (page 34).

To turn on the player

Press POWER on the player. The player enters standby mode and the power indicator lights up in red. Press I/⏻ on the remote. The player turns on and the power indicator lights up in green. In standby mode, the player also turns on by pressing ⏏ on the player or by pressing ▷.

To turn off the player

Press I/⏻ on the remote. The player enters standby mode and the power indicator lights up in red. To turn off the player completely, press POWER on the player. While playing a disc, do not turn off the player by pressing POWER. Doing so may cancel the menu settings. When you turn off the player, first press ■ to stop playback and then press I/⏻ on the remote.

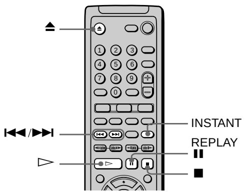
Notes on playing DTS sound tracks on a CD

- When playing DTS-encoded CDs, excessive noise will be heard from the analog stereo jacks. To avoid possible damage to the audio system, the consumer should take proper precautions when the analog stereo jacks of the player are connected to an amplification system. To enjoy DTS Digital Surround™ playback, an external 5.1-channel decoder system must be connected to the digital jacks of the player.
- Set the sound to "STEREO" using the AUDIO button when you play DTS sound tracks on a CD (page 48).
- Do not play DTS sound tracks without first connecting the player to an audio component having a built-in DTS decoder. The player outputs the DTS signal via the DIGITAL OUT (OPTICAL and COAXIAL) jacks even if "DTS" in "AUDIO SETUP" is set to "OFF" in the Setup Display (page 71), and may affect your ears or cause your speakers to be damaged.

Notes on playing DVDs with a DTS sound track

- DTS audio signals are output only through the DIGITAL OUT (OPTICAL and COAXIAL) jack.
- If you connect the player to audio equipment without a DTS decoder, do not set "DTS" to "ON" in "AUDIO SETUP" (page 71). A loud noise may come out from the speakers, affecting your ears or causing the speakers to be damaged.
- When you play a DVD with DTS sound tracks, set "DTS" to "ON" in "AUDIO SETUP" (page 71).

Additional operations



To	Operation
Stop	Press ■
Pause	Press ❚❚
Resume play after pause	Press ❚❚ or ▷
Go to the next chapter, track or scene in continuous play mode	Press ⏭
Go back to the preceding chapter, track or scene in continuous play mode	Press ⏮
Stop play and remove the disc	Press ⏏
Replay the last viewed scene (DVD only)	Press INSTANT REPLAY

💡 The Instant Replay function is useful when you want to review a scene or dialog that you missed.

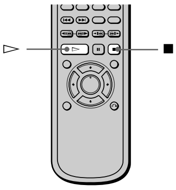
Note

You may not be able to use the Instant Replay function with some scenes.

Resuming Playback from the Point Where You Stopped the Disc (Resume Play)

DVD VIDEO CD CD

When you stop the disc, the player remembers the point where you pressed ■ and RESUME appears on the front panel display. As long as you do not open the disc tray, Resume Play works even if the player enters standby mode by pressing I/⏻.



1 While playing a disc, press ■ to stop playback.

RESUME appears on the front panel display and you can restart the disc from the point where you stopped the disc.
If RESUME does not appear, Resume Play is not available.

2 Press ▷.

The player starts playback from the point where you stopped the disc in Step 1.

💡 To play from the beginning of the disc, press ■ twice, then press ▷.

Notes

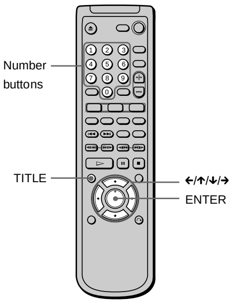
- Depending on where you stopped the disc, the player may not resume playback from exactly the same point.
- The point where you stopped playing is cleared when:
  - you turn the power off by pressing POWER on the player.
  - you change the play mode.
  - you change the settings on the Setup Display.

Using the DVD's Menu DVD

Some discs have a "title menu" or a "DVD menu". On some DVDs, this may simply be called a "menu" or "title."

Using the title menu

A DVD is divided into long sections of a picture or a music feature called "titles." When you play a DVD which contains several titles, you can select the title you want using the title menu.



1 Press TITLE.

The title menu appears on the TV screen. The contents of the menu vary from disc to disc.

2 Press ←/↑/↓/→ or the number buttons to select the title you want to play.

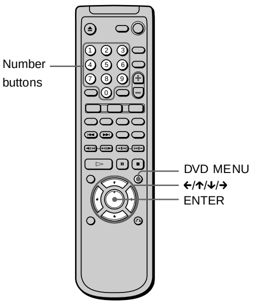
3 Press ENTER.

The player starts playing the selected title.

💡 You can also display the title menu by pressing TITLE on the player.

Using the DVD menu

Some DVDs allow you to select the disc contents using a menu. When you play these DVDs, you can select items such as the language for the subtitles and the language for the sound using the DVD menu.



1 Press DVD MENU.

The DVD menu appears on the TV screen. . The contents of the menu vary from disc to disc.

2 Press ←/↑/↓/→ or the number buttons to select the item you want to change.

3 To change other items, repeat Step 2.

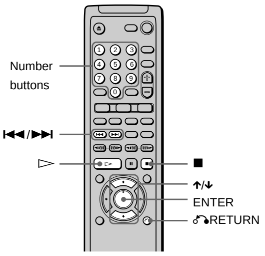
4 Press ENTER.

💡 You can also display the DVD menu by pressing DVD MENU on the player.

Playing VIDEO CDs with PBC Functions (PBC Playback)

VIDEO CD

With PBC (Playback Control) functions, you can enjoy simple interactive operations, search functions, and other such operations. PBC playback allows you to play VIDEO CDs interactively by following the menu on the TV screen.



1 Start playing a VIDEO CD with PBC functions.
The menu for your selection appears.

2 Select the item number you want by pressing ↑/↓ or the number buttons.

3 Press ENTER.

4 Follow the instructions in the menu for interactive operations.
Refer to the instructions supplied with the disc, as the operating procedure may differ according to the VIDEO CD.

To go back to the menu
Press ↶ RETURN.

💡 To play without using PBC, press ⏮/⏭ or the number buttons while the player is stopped to select a track, then press ▷ or ENTER.
Play without PBC appears on the TV screen and the player starts continuous play. You cannot play still pictures such as a menu. To return to PBC playback, press ■ twice then press ▷.

Note
Depending on the VIDEO CD, Press ENTER in Step 3 may appear as Press SELECT in the instructions supplied with the disc. In this case, press ▷.

Various Play Mode Functions (Program Play, Shuffle Play, Repeat Play, A-B Repeat Play)

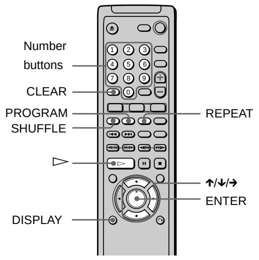
DVD VIDEO CD CD

You can set the following play modes:
- Program Play (page 35)
- Shuffle Play (page 37)
- Repeat Play (page 37)
- A- B Repeat Play (page 38)

Notes
- The play mode is cancelled when:
  you open the disc tray.
  the player enters standby mode by pressing I/⏻ on the remote.
  you turn the power off by pressing POWER on the player.
- If you are playing a VIDEO CD with PBC, you must first cancel PBC playback before you can set a play mode (except when you want to set A-B repeat for moving pictures).

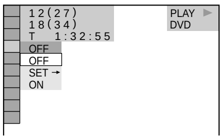
Creating your own program (Program Play)

You can play the contents of a disc in the order you want by arranging the order of the titles, chapters or tracks on the disc to create your own program. You can program up to 99 titles, chapters, and tracks.

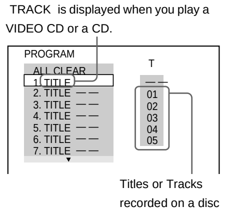


1 Press DISPLAY twice (When playing a CD, press once).
The Control Menu appears.

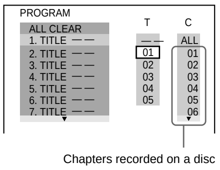
2 Press ↑/↓ to select (PROGRAM), then press ENTER.
The options for PROGRAM appear.



3 Press ↑/↓ to select "SET →", then press ENTER.
The display for programming appears.



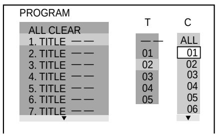
4 Press →.
The cursor moves to the title or track (in this case, 01).



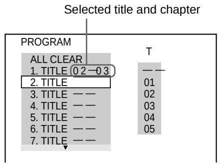
continued

5 Select the title, chapter, or track you want to program.

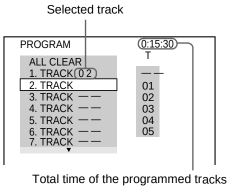
■When playing a DVD
For example, select chapter 03 of title 02 .
Press ↑/↓ or the number buttons to select 02 under T, then press ENTER.



Next, press ↑/↓ or the number buttons to select 03 under C, then press ENTER.



■When playing a VIDEO CD or CD
For example, select track 02 .
Press ↑/↓ or the number buttons to select 02 under T, then press ENTER.



6 To program other titles, chapters, or tracks, repeat Steps 4 to 5.
The programmed titles, chapters, and tracks are displayed in the selected order.

7 Press ▷ to start Program Play.
Program Play begins.
When the program ends, you can restart the same program again by pressing ▷.

To return to normal play
Press CLEAR, or select OFF in Step 3.
To play the same program again, select ON in Step 3 and press ▷.

To turn off the Control Menu
Press DISPLAY repeatedly until the Control Menu is turned off.

To change the program
1. In Step 4, select the program number of the title, chapter, or track you want to change using ↑/↓ or the number buttons, and press →.
2. Follow Step 5 for new programming.

To cancel the programmed order
To cancel all the titles, chapters, or tracks in the programmed order, press ↑, and select ALL CLEAR in Step 4. To cancel the selected program, select the program using ↑/↓ in Step 4, then press CLEAR, or select -- in Step 5, then press ENTER.

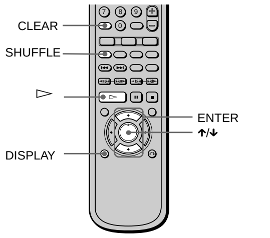
💡 You can do Repeat Play or Shuffle Play of the programmed titles, chapters, or tracks. Press REPEAT or SHUFFLE, or set REPEAT or SHUFFLE to on in the Control Menu display during Program Play.

💡 You can select PROGRAM directly by pressing PROGRAM.

Note
The number of titles, chapters, or tracks displayed are the same number of titles, chapters, or tracks recorded on a disc.

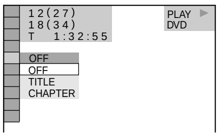
Playing in random order (Shuffle Play)

You can have the player "shuffle" titles, chapters, or tracks and play them in a random order. Subsequent "shuffling" may produce a different playing order.



1 Press DISPLAY twice during playback (When playing a CD, press once).
The Control Menu appears.

2 Press ↑/↓ to select (SHUFFLE), then press ENTER.
The options for SHUFFLE appear.



3 Press ↑/↓ to select the item.

■When playing a DVD (and when Program Play is set to OFF)
- TITLE: shuffle titles and plays them in a random order.
- CHAPTER: shuffle chapters and plays them in a random order.

■When playing a VIDEO CD or CD (Program Play is set to OFF)
- TRACK: shuffle tracks and plays them in a random order.

■When playing a VIDEO CD, CD or DVD (Program Play is set to ON)
- ON: shuffle titles or tracks selected in Program Play and plays them in a random order.

4 Press ENTER.

To return to normal play
Press CLEAR, or select "OFF" in Step 3.

To turn off the Control Menu
Press DISPLAY repeatedly until the Control Menu is turned off.

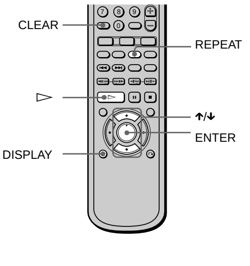
💡 You can set Shuffle Play while the player is stopped. After selecting the SHUFFLE option, press ▷. Shuffle Play starts.

💡 You can select SHUFFLE directly by pressing SHUFFLE.

Note
Up to 200 chapters in a disc can be played in random order when "CHAPTER" is selected.

Playing repeatedly (Repeat Play)

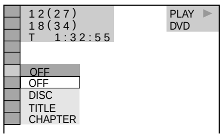
You can play all of the titles or tracks on a disc or a single title, chapter or track repeatedly.
You can use a combination of Shuffle or Program Play modes.



continued

1 **Press DISPLAY twice during playback (when playing a CD, press once).**
The Control Menu appears.

2 **Select [REPEAT icon] REPEAT using ↑/↓, then press ENTER.**
The options for REPEAT appear.



3 **Press ↑/↓ to select the item.**

■When playing a DVD (Program Play and Shuffle Play are set to OFF)
- DISC: repeats all of the titles.
- TITLE: repeats the current title on a disc.
- CHAPTER: repeats the current chapter.

■When playing a VIDEO CD or CD (Program Play and Shuffle Play are set to OFF)
- DISC: repeats all of the tracks on a disc.
- TRACK: repeats the current track.

■When Program Play or Shuffle Play is on
- ON: repeats Program Play or Shuffle Play.

4 **Press ENTER.**

To return to normal play
Press CLEAR, or select "OFF" in Step 3.

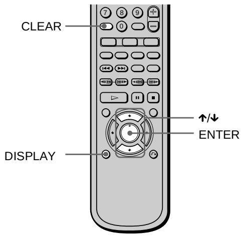
To turn off the Control Menu
Press DISPLAY repeatedly until the Control Menu is turned off.

💡 You can set Repeat Play while the player stopped. After selecting the "REPEAT" option, press ▷. Repeat Play starts.

💡 You can select REPEAT directly by pressing REPEAT.

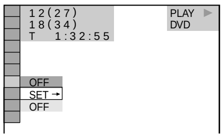
Repeating a specific portion (A-B Repeat Play)

You can play a specific portion of a title, chapter or track repeatedly. (This function is useful when you want to memorize lyrics, etc.)

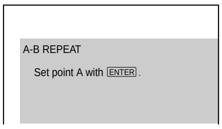


1 **Press DISPLAY twice during playback (when playing CD, press once).**
The Control Menu appears.

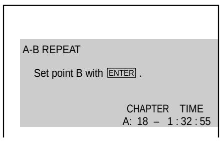
2 **Press ↑/↓ to select [A-B icon] (A-B REPEAT), then press ENTER.**
The options for A-B REPEAT appear.



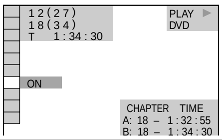
3 **Press ↑/↓ to select "SET →", then press ENTER.**
The A-B REPEAT setting display appears.



4 **During playback, when you find the starting point (point A) of the portion to be played repeatedly, press ENTER.**
The starting point (point A) is set.



5 **When you reach the ending point (point B), press ENTER again.**
The set points are displayed and the player starts repeating this specific portion.
"A-B" appears on the front panel display during A-B Repeat Play.



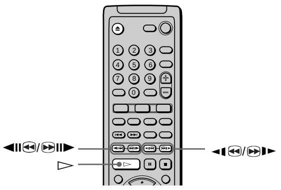
To return to normal play
Press CLEAR, or select "OFF" in Step 3.

To turn off the Control Menu
Press DISPLAY repeatedly until the Control Menu is turned off.

Notes
- You can set A-B Repeat Play for only one specific section.
- When you set A-B Repeat Play, the settings for Shuffle Play, Repeat Play, and Program Play are cancelled.

Searching for a Particular Point on a Disc (Search, Scan, Slow-motion play, Freeze Frame) DVD VIDEO CD CD

You can locate a particular point on a disc quickly by monitoring the picture or playing back slowly.



Note
Depending on the DVD/VIDEO CD, you may not be able to do some of the operations described.

Locating a point quickly (Search)

While a disc is playing, keep pressing ⏭II▶ to locate a point in playback direction at the FF1▶▶* speed or keep pressing ◀II⏮ to locate a point in opposite direction at the FR1◀◀* speed. When you find the point you want, release the button to return to normal playback speed.

* The FF1▶▶/FR1◀◀ playback speed is the same as the scan speed described below.

Locating a point quickly by playing a disc in fast forward or fast reverse (Scan)

Press ◀I⏮ or ⏭I▶ while playing a disc. When you find the point you want, press ▷ to return to normal speed.
Each time you press ◀I⏮ or ⏭I▶ during scan the playback speed changes. Three speeds are available. With each press the indication changes as follows:

Playback direction
x2▶ (DVD/CD only) → FF1▶▶ → FF2▶▶

Opposite direction
x2◀ (DVD only) → FR1◀◀ → FR2◀◀

The x2▶/x2◀ playback speed is about twice the normal speed. The FF2▶▶/FR2◀◀ playback speed is faster than FF1▶▶/FR1◀◀.

Watching frame by frame (Slow-motion play) DVD VIDEO CD

You can use this function only for DVDs or VIDEO CDs. Press ◀I⏮ or ⏭I▶ when the player is in the pause mode. To return to the normal speed, press ▷.
Each time you press ◀I⏮ or ⏭I▶ during Slow-motion play the playback speed changes. Two speeds are available. With each press the indication changes as follows:

Playback direction
SLOW 2I▶ ←→ SLOW 1I▶

Opposite direction (DVD only)
SLOW 2◀I ←→ SLOW 1◀I

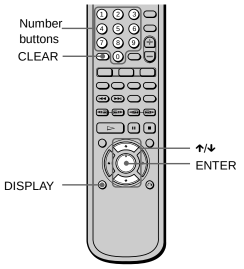
The SLOW2I▶/SLOW2◀I playback speed is slower than SLOW1I▶/SLOW1◀I.

Playing one frame at a time DVD VIDEO CD

You can use this function only for DVDs or VIDEO CDs. When the player is in the pause mode, press ⏭II▶ to go to the next frame. Press ◀II⏮ to go to the precding frame (DVD only). To return to normal playback, press ▷.

Searching for a Title/Chapter/Track/Index/Scene DVD VIDEO CD CD

You can search a DVD disc by title or chapter, and you can search a VIDEO CD or CD by track, index, or scene. As titles and tracks are assigned unique numbers on the disc, you can select the desired one by entering its number. Or, you can search for a scene using the time code. (TIME SEARCH)



1 **Press DISPLAY.**
The Control Menu appears.

2 **Press ↑/↓ to select the search method.**

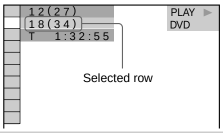
■When playing a DVD
[icon] (TITLE), [icon] (CHAPTER), or [icon] (TIME/TEXT)
Select TIME/ TEXT for TIME SEARCH (See below).

■When playing a VIDEO CD
[icon] (TRACK) or [icon] (INDEX)

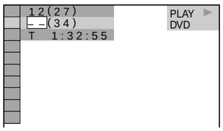
■When playing a VIDEO CD with PBC Playback
[icon] (SCENE)

■When playing a CD
[icon] (TRACK) or [icon] (INDEX)

Example: when you select [icon] (CHAPTER)
"** (**)" is selected (** refers to a number).
The number in parentheses indicates the total number of titles, chapters, tracks, indexes or scenes.



3 **Press ENTER.**
"** (**)" changes to "-- (**)".



4 **Press ↑/↓ or the number buttons to select the title, chapter, track, index, or scene number you want to search.**

If you make a mistake
Cancel the number by pressing CLEAR, then select another number.

5 **Press ENTER.**
The player starts playback from the selected number.

To turn off the Control Menu
Press DISPLAY repeatedly until the Control Menu is turned off.

continued

To search for a scene using the time code (TIME SEARCH) (DVD only)

1. In Step 2, select (TIME/TEXT).
   "T **:**:**" (playing time of the current title) is selected.
2. Press ENTER.
   "T **:**:**" changes to "T --:--:--."
3. Input the time code using the number buttons, then press ENTER.
   For example, to find the scene at 2 hours, 10 minutes, and 20 seconds after the beginning, just enter "2:10:20."

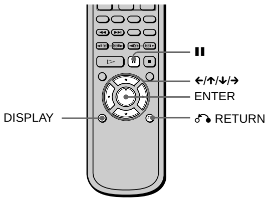
You can display the first scene of titles, chapters or tracks recorded on the disc on a screen divided into 9 scenes. You can start playback directly by selecting one of the scenes. For details, see page 42.

Note

The title, chapter or track number displayed is the same number recorded on the disc.

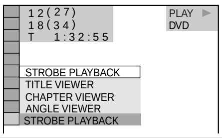
Searching by Using the Scenes (VIEWER) DVD VIDEO CD

You can divide the screen into 9 sub-screens and find the desired scene quickly.



1 Press DISPLAY twice during playback.
The Control Menu appears.

2 Press ↑/↓ to select (VIEWER), then press ENTER.
The options for VIEWER appear.



3 Press ↑/↓ to select the item.
Refer to the explanations given for each items in the following sections.
- STROBE PLAYBACK
- TITLE VIEWER (for DVD only)
- CHAPTER VIEWER (for DVD only)
- TRACK VIEWER (for VIDEO CD only)
- ANGLE VIEWER (for DVD only)

4 Press ENTER.

To return to the normal play

Press RETURN.

To turn off the Control Menu

Press DISPLAY repeatedly until the Control Menu is turned off.

Notes
- Depending on the disc, you may not be able to select all functions.
- The sound is muted when using this function.

Dividing a track into 9 sections (STROBE PLAYBACK) DVD VIDEO CD

You can display 9 consecutive moving pictures on the screen. When you press ❚❚, the moving pictures pause.

Select "STROBE PLAYBACK" in Step 3, then press ENTER in Step 4.

Scanning the title, chapter or track DVD VIDEO CD

You can divide the screen into 9 subscreens and display the first scene of titles, chapters or tracks. You can also play back from the selected title, chapter or track.

Select the item you want in Step 3, then press ENTER in Step 4.

■When playing a DVD

Select "TITLE VIEWER" or "CHAPTER VIEWER".

■When playing a VIDEO CD

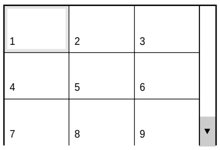
Select "TRACK VIEWER".

The initial scenes of titles, chapters or tracks appear.

To start playback from the selected scene

Select the scene using ←/↑/↓/→ and press ENTER. The playback starts from the selected scene.

If there are more than 9 titles, chapters or tracks, ▼ is displayed at the right bottom.
To display the additional titles, chapters or tracks, select the right bottom scene (the position 9) and press ↓. To return to the previous scene, select the left top scene (the position 1) and press ↑.



Displaying different angles simultaneously DVD

If various angles (multi-angles) for a scene are recorded on the DVD, you can display all of the angles recorded on the disc on the same screen, and start playback in continuous mode at the chosen angle. The angles are displayed on a screen divided in 9 sections.

Select "ANGLE VIEWER" in Step 3, then press ENTER in Step 4.

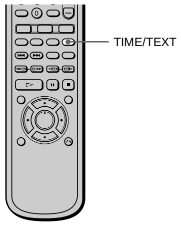
To return to the normal play

Press RETURN.

Searching for a Scene

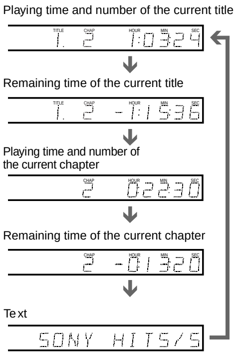
Viewing the Playing Time and Remaining Time on the Front Panel Display DVD VIDEO CD CD

You can check information about the disc, such as the remaining time, total number of titles of a DVD, or tracks of a CD or VIDEO CD, using the front panel display (page 9).

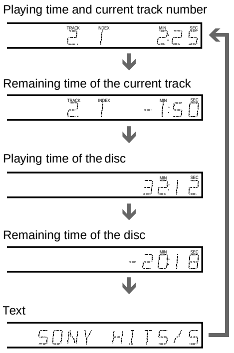


Press TIME/TEXT.
Each time you press TIME/TEXT while playing the disc, the display changes as shown in the following chart.

When playing a DVD



When playing a VIDEO CD (without PBC functions) or CD



When playing VIDEO CDs with PBC functions, the scene number and the playing time are displayed.

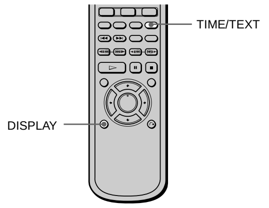
The playing time and remaining time of the current chapter, title, track, scene, or disc will also appear on your TV screen. See the following section "Checking the Playing Time and Remaining Time" for instructions on how to read this information.

Note

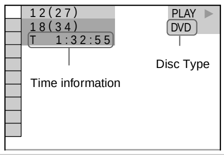
Depending on the type of disc being played and the playing mode, the above mentioned disc information may not be displayed.

Checking the Playing Time and Remaining Time DVD VIDEO CD CD

You can check the playing time and remaining time of the current title, chapter, or track, and the total playing time or remaining time of the disc. Also, you can check the DVD/CD text recorded on the disc.



1 Press DISPLAY during playback.
The Control Menu appears.



2 Press TIME/TEXT repeatedly to change the time information.
The display and the kinds of time that you can change depend on the disc you are playing.

Viewing Information About the Disc

continued

■**When playing a DVD**

- T **:**:**
  Playing time of the current title
- T–**:**:**
  Remaining time of the current title
- C **:**:**
  Playing time of the current chapter
- C–**:**:**
  Remaining time of the current chapter

■**When playing a VIDEO CD (with PBC functions)**

- **:**
  Playing time of the current scene

■**When playing a VIDEO CD (without PBC functions) or CD**

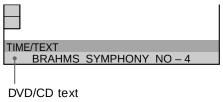
- T **:**
  Playing time of the current track
- T–**:**
  Remaining time of the current track
- D **:**
  Playing time of the current disc
- D–**:*
  Remaining time of the current disc

To turn off the Control Menu

Press DISPLAY repeatedly until the Control Menu is turned off.

Checking the DVD/CD text

Press TIME/TEXT repeatedly in Step 3 to display the text recorded on the DVD/CD. The DVD/CD text appears only when the text is recorded in the disc. You can not change the text.



If the DVD/CD text does not fit on a single line, you can see the entire text by watching it scroll across the front display.

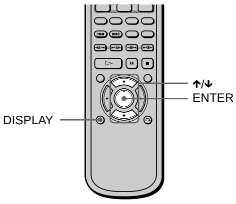
You can select the time and text by pressing TIME/TEXT.

Notes

- Only letters of the alphabet can be displayed.
- This player can only display the first level of DVD/CD text, such as the disc name or title.

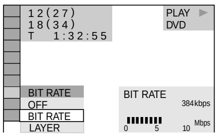
Checking the Play Information (ADVANCED) DVD

You can check information such as the bit rate or the disc layer that is being played. While playing a disc, an approximate bit rate of the playback picture is always displayed as Mbps (Mega bit per second) and the audio as kbps (kilo bit per second).



1 Press DISPLAY during playback.
The Control Menu is displayed.

2 Press ↑/↓ to select (ADVANCED), then press ENTER.
The options for ADVANCED appear.



3 Press ↑/↓ to select items.
For each item, please refer to "Displays of each item."
- BIT RATE: displays the bit rate.
- LAYER: displays the layer and the pick-up point.

4 Press ENTER.

To close the ADVANCED window

Select "OFF" in Step 3.

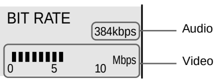
To turn off the Control Menu

Press DISPLAY repeatedly until the Control Menu is turned off.

Displays of each item

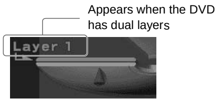
By pressing DISPLAY repeatedly, you can display either "BIT RATE" or "LAYER," whichever was selected in "ADVANCED."

BIT RATE



Bit rate refers to the amount of video/audio data per second in a disc. The higher the bit rate, the larger the amount of data. When the bit rate level is high, there is a large amount of data. However, this does not always mean that you can get higher quality pictures or sounds.

LAYER



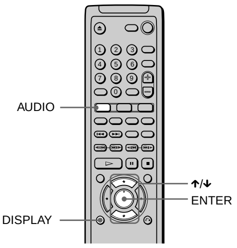
Indicates the approximate point where the disc is playing.
If it is a dual-layer DVD, the player indicates which layer is being read ("Layer 0" or "Layer 1").
For details on the layers, see page 79 (DVD).

Viewing Information About the Disc

Sound Adjustments

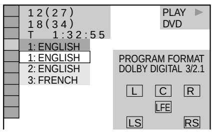
Changing the Sound DVD VIDEO CD CD

If the DVD is recorded with multilingual tracks, you can select the language you want while playing the DVD.
If the DVD is recorded in multiple audio formats (PCM, Dolby Digital, or DTS), you can select the audio format you want while playing the DVD.
With stereo CDs or VIDEO CDs, you can select the sound from the right or left channel and listen to the sound of the selected channel through both the right and left speakers. (In this case, the sound loses its stereo effect.) For example, when playing a disc containing a song with the vocals on the right channel and the instruments on the left channel, you can select the left channel and hear the instruments from both speakers.



1 Press DISPLAY during playback.
The Control Menu is displayed.

2 Press ↑/↓ to select (AUDIO), then ENTER.
The options for AUDIO appear.



3 Press ↑/↓ to select the desired audio signal.

■**When playing a DVD**
Depending on the DVD, the choice of language varies.
When 4 digits are displayed, they represent the language code. Refer to the language code list on page 82 to see which language the code represents.
When the same language is displayed two or more times, the DVD is recorded in multiple audio formats.

■**When playing a VIDEO CD or CD**
The default setting is underlined.
- STEREO: The standard stereo sound
- 1/L: The sound of the left channel (monaural)
- 2/R: The sound of the right channel (monaural)

4 Press ENTER.

To turn off the Control Menu

Press DISPLAY repeatedly until the Control Menu is turned off.

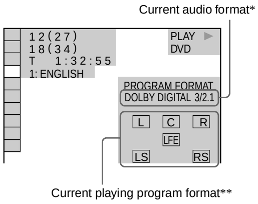
You can select AUDIO directly by pressing AUDIO. Each time you press the button, the item changes. During playback a DVD, the sound may change automatically.

Note

For discs not in multiple audio format, you cannot change the sound.

Displaying the audio information of the disc DVD

When you select "AUDIO," the channels being played are displayed on the screen. For example, in Dolby Digital format, multiple signals ranging from monaural to 5.1 channel signals can be recorded on a DVD. Depending on the DVD, the number of the recorded channels may differ.



* "PCM," "DTS," "DOLBY DIGITAL" is displayed.
In case of "DOLBY DIGITAL," the channels in the playing track are displayed by numbers as follows:

For Dolby Digital 5.1 ch:

Rear component 2

DOLBY DIGITAL 3 / 2 . 1

Front component 2 + Center component 1

LFE (Low Frequency Effect) component 1

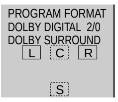
**The letters in the program format display mean the following sound component:

L: Front (left)
R : Front (right)
C : Center
LS : Rear (left)
RS : Rear (right)
S : Rear (monaural): The rear component of the Dolby Surround processed signal or the Dolby Digital signal.
LFE :LFE (Low Frequency Effect)

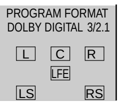
The display examples are as follows:

- PCM (stereo)

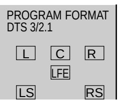
- Dolby Surround



- Dolby Digital 5.1ch
  When an LFE signal component is output, "LFE" is enclosed in a solid line. When an LFE signal component is not output, "LFE" is enclosed in a broken line.



- DTS
  "LFE" is always enclosed in a solid line regardless of the LFE signal component being output.



Notes

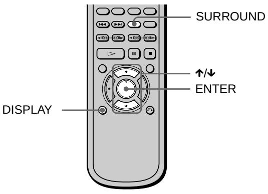
- When the signal contains rear signal components such as LS, RS or S, the Surround effect is enhanced (page 50).
- If "DTS" is set to "OFF" in "AUDIO SETUP (page 71)," the DTS track selection option will not appear on the screen even if the disc contains DTS tracks.

Sound Adjustments

SURROUND Mode Settings

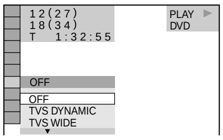
DVD VIDEO CD CD

You can enjoy surround sounds while playing discs including Dolby Digital DVDs, even if you have only 2 or 4 speakers. Select surround mode that best suits your speaker setup.



1 Press DISPLAY during playback.
The Control Menu appears.

2 Press ↑/↓ to select (SURROUND), then press ENTER.
The options for SURROUND appear.



3 Press ↑/↓ to select one of the SURROUND sounds.
Refer to the following explanations given for each item.

For 2 speaker setups

- •TVS DYNAMIC
- •TVS WIDE
- •TVS NIGHT
- •TVS STANDARD

For 4 (or more) speaker setups

(If you select "NONE" in the setting of "REAR" in "SPEAKER SETUP"(page 72), you cannot select these modes.)

- •NORMAL SURROUND
- •ENHANCED SURROUND
- •VIRTUAL REAR SHIFT
- •VIRTUAL MULTI REAR
- •VIRTUAL MULTI DIMENSION

4 Press ENTER.

To cancel the setting

Select "OFF" in Step 3.

To turn off the Control Menu

Press DISPLAY repeatedly until the Control Menu is turned off.

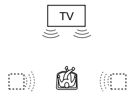
For 2 speaker setups

When you connect only 2 front speakers, TVS (TV Virtual Surround) lets you enjoy surround sound effects by using sound imaging to create virtual rear speakers from the sound of the front speakers (L: left, R: right) without using actual rear speakers. Select one of the following modes:

If the player is set up to output the signal from the DIGITAL OUT (OPTICAL or COAXIAL) jack, the surround effect will be heard only when you set "DOLBY DIGITAL" to "D-PCM" in "AUDIO SETUP." (page 71)

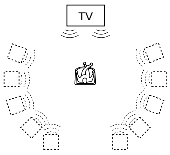
TVS (TV Virtual Surround) DYNAMIC

Uses sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers (shown below). The sound imaging effect is distinct and clearly reproduces each aural element of the audio track.
This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.



TVS (TV Virtual Surround) WIDE

Uses sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below. This gives the sound an expanded effect that fills the area surrounding the listener.
This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.

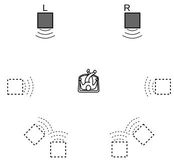


TVS (TV Virtual Surround) NIGHT

The large sounds, such as explosions, are compressed, but the quieter sounds are unaffected. This feature is useful when you don't want to disturb other people but still want to hear the dialog and enjoy the surround sound effects of TVS WIDE.

TVS (TV Virtual Surround) STANDARD

Uses sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below. Use this setting when you want to use TVS with 2 separete speakers and retain the sound quality.



L : Front speaker (left)
R : Front speaker (right)
□ : Virtual speaker

For 4 (or more) speaker setups

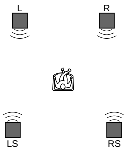
You can enjoy the following surround effects by using the 2 front speakers and 2 rear speakers.
Connect the player to the receiver with the B-1 connection (page 21).
You can experience Dolby Surround (Pro Logic) sounds or Digital Cinema Sound (DCS). DCS uses sound imaging to shift the sound of the rear speakers away from the actual speaker position or create entire sets of virtual rear speakers from one set of actual rear speakers. "VIRTUAL REAR SHIFT," "VIRTUAL MULTI REAR," and "VIRTUAL MULTI DIMENSION" make use of this technology.

Sound Adjustments

continued

NORMAL SURROUND

Software with 2 channel audio signals is decoded with Dolby Surround (Pro Logic) to create surround effects. The rear speakers will emit identical monaural sounds. If you are using a center speaker, Dolby Surround (Pro Logic) will also create the appropriate sounds for the center speaker.



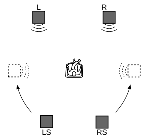
ENHANCED SURROUND

Provides a greater sense of presence from a Dolby Surround (Pro Logic) source with a monaural rear channel signal. Produces a stereo like effect in the rear channels.

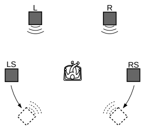
VIRTUAL REAR SHIFT

Uses sound imaging to shift the sound of the rear speakers away from the actual speaker position.
The virtual speakers are reproduced as shown in the illustration below. The shift position differs according to "REAR" or "SIDE" setting of the rear speakers (page 72).

REAR



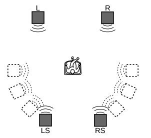
SIDE



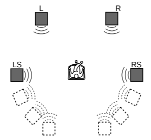
VIRTUAL MULTI REAR

Uses sound imaging to create an array of virtual rear speakers from a single pair of actual rear speakers. The virtual speakers are reproduced as shown in the illustration below. The position of the virtual rear speakers differs according to "REAR" or "SIDE" setting of the rear speakers (page 72).

REAR



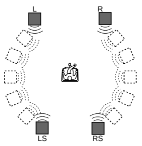
SIDE



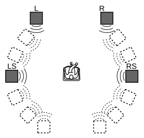
VIRTUAL MULTI DIMENSION

Uses sound imaging to create an array of virtual rear speaker positions higher than the listener from a single pair of actual rear speakers.
This mode creates five sets of virtual speakers surrounding the listener at approximately a 30° angle of elevation. The effect differs according to "REAR" or "SIDE" setting of the rear speakers (page 72).

REAR



SIDE



L : Front speaker (left)
R : Front speaker (right)
LS :Rear speaker (left)
RS :Rear speaker (right)
□ : Virtual speaker

You can select SURROUND directly by pressing SURROUND on the remote or player. Each time you press the button, the item changes. If you select any setting other than "OFF," the indicator on the player lights up.

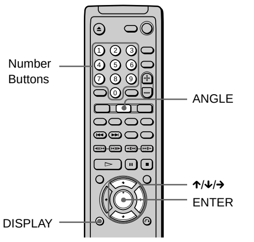
Notes

- To enjoy the multichannel audio through the 5.1CH OUTPUT jacks, correctly set each speaker position and distance. For details on setting each speaker, see page 72.
- When you select an item, the sound cuts off for a moment.
- When the playing signal does not contain a signal for the rear speakers (page 49), the surround effects may be difficult to hear.
- When you select "TVS DYNAMIC," "TVS WIDE," "TVS NIGHT" or "TVS STANDARD," the player does not output the sound from the center speaker.
- When you select one of the SURROUND modes, turn off the surround setting of the connected TV or amplifier (receiver).
- If the player is set up to output the signal from the DIGITAL OUT (OPTICAL or COAXIAL) jack, the surround effect will not be heard when you play a CD.
- Make sure that your listening position is between and at an equal distance from your speakers, and that the speakers are located in similar surroundings. Otherwise, the TVS effect may be hard to discern.
- TVS NIGHT only works with Dolby Digital discs. However, not all discs will respond to the TVS NIGHT function in the same way.
- If you use the DIGITAL OUT (OPTICAL or COAXIAL) jack and set "DOLBY DIGITAL" to "DOLBY DIGITAL" in "AUDIO SETUP," sound will come from your speakers but it will not have the TVS effect.

Sound Adjustments

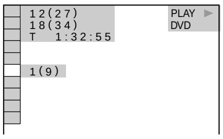
Changing the Angles DVD

If various angles (multi-angles) for a scene are recorded on the DVD, "ANGLE" appears in the front panel display. This means that you can change the viewing angle.
For example, while playing a scene of a train in motion, you can display the view from either the front of the train, the left window of the train or from the right window without having the train's movement interrupted.

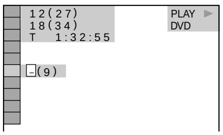


1 Press DISPLAY during playback.
The Control Menu appears.

2 Press ↑/↓ to select (ANGLE).
The number of the angle appear.
The number in parentheses indicates the total number of angles.



3 Press → or ENTER.
The number of the angle changes to "-."



4 Select the angle number using the number buttons or ↑/↓, then press ENTER.
The angle is changed to the selected angle.

To turn off the Control Menu

Press DISPLAY repeatedly until the Control Menu is turned off.

You can select the angle directly by pressing ANGLE. Each time you press the button, the angle changes.

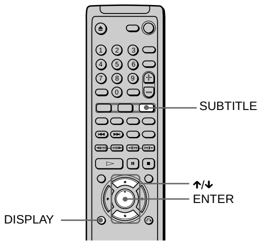
You can display all the angles recorded on the disc on the same screen, and start playback directly in continuous mode from the chosen angle. The angles are displayed on a screen divided in 9 sections. For details, see page 42.

Note

Depending on the DVD, you may not be able to change the angles even if multi-angles are recorded on the DVD.

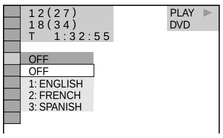
Displaying the Subtitles DVD

If subtitles are recorded on the discs, you can turn the subtitles on and off whenever you want while playing. If multilingual subtitles are recorded on the disc, you can change the subtitle language while playing, and turn it on or off whenever you want. For example, you can select the language you want to practice and turn the subtitles on for better understanding.



1 Press DISPLAY during playback.
The Control Menu appears.

2 Press ↑/↓ to select (SUBTITLE), then press ENTER.
The options for SUBTITLE appear.



3 Press ↑/↓ to select the language.
Depending on the DVD, the choice of language varies.
When 4 digits are displayed, they indicate the language code. Refer to the language code list on page 82 to see which language the code represents.

4 Press ENTER.

To cancel the setting

Select "OFF" in Step 3.

To turn off the Control Menu

Press DISPLAY repeatedly until the Control Menu is turned off.

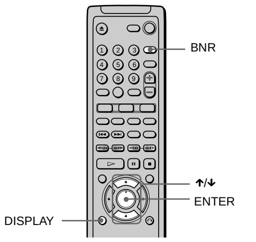
You can select SUBTITLE directly by pressing SUBTITLE. Each time you press the button, the item changes.

Note

Depending on the DVD, you may not be able to change the subtitles on even if multilingual subtitles are recorded on it.

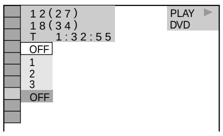
Adjusting the Picture Quality (BNR) DVD VIDEO CD

The Block Noise Reduction (BNR) function adjusts the picture quality by reducing the "block noise" or mosaic like patterns that appear on your TV screen.



1 Press DISPLAY twice during playback.
The Control Menu appears.

2 Press ↑/↓ to select (BNR), then press ENTER.
The options for BNR appear.



3 Press ↑/↓ to select a level.
As the value increases, the mosaic like patterns on your TV screen will decrease.
- 1: reduces the "block noise".
- 2: reduces the "block noise" more than 1.
- 3: reduces the "block noise" more than 2.

4 Press ENTER.
The disc plays with the setting you selected.

To cancel the BNR setting

Select "OFF" in Step 3.

To turn off the Control Menu

Press DISPLAY repeatedly until the Control Menu is turned off.

You can set BNR while the player is stopped.

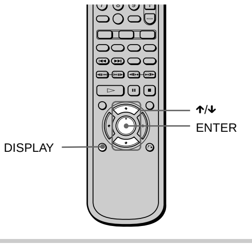
You can select BNR directly by pressing BNR on the remote or player. Each time you press the button, the item changes. If you select any setting other than "OFF," the indicator on the player lights up.

Notes

- If the outlines of the images on your screen should become blurred, set "BNR" to "OFF."
- Depending on the disc or the scene being played, the BNR effect may be hard to discern,

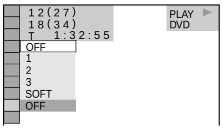
Enhancing the Playback Picture (DIGITAL VIDEO ENHANCER) DVD VIDEO CD

The Digital Video Enhancer function makes the picture appear clear and crisp by enhancing the outlines of images on your TV screen. Also, this function can soften the images on the screen.



1 Press DISPLAY twice during playback.
The Control Menu appears.

2 Press ↑/↓ to select (DIGITAL VIDEO ENHANCER), then press ENTER.
The options for DIGITAL VIDEO ENHANCER appear.



3 Press ↑/↓ to select a level.
As the value increases, the outlines of images on your TV screen will become crisper.
- 1: enhances the outline.
- 2: enhances the outline more than 1.
- 3: enhances the outline more than 2.
- SOFT: softens the image (DVD only).

4 Press ENTER.
The disc plays with the setting you selected.

To cancel the DIGITAL VIDEO ENHANCER setting

Select "OFF" in Step 3.

To turn off the Control Menu

Press DISPLAY repeatedly until the Control Menu is turned off.

You can set DIGITAL VIDEO ENHANCER while the player is stopped.

Note

Depending on the DVD/VIDEO CD disc or the scene being played, noise found in the disc may become more apparent. If this happens, reduce the Digital Video Enhancer level.

Locking Discs (CUSTOM PARENTAL CONTROL, PARENTAL CONTROL)

You can set two kinds of playback restrictions for the desired disc.
- Custom Parental Control
  You can set the playback restrictions so that the player will not play inappropriate discs.
- Parental Control
  Playback of some DVDs can be limited according to a predetermind level such as the age of the users.

The same password is used for both Parental Control and Custom Parental Control.

Custom Parental Control DVD VIDEO CD CD

You can set the same Custom Parental Control password for up to 50 discs. When you set the fifty-first-disc, the first disc is cancelled.

1 Insert the disc you want to lock.
If the disc is playing, press ■ to stop playback.

2 Press DISPLAY while the player is in stop mode.
The Control Menu appears.

3 Press ↑/↓ to select [icon] (CUSTOM PARENTAL CONTROL), then press ENTER.
"CUSTOM PARENTAL CONTROL" is selected.

```
1 2 ( 2 7 )          STOP
1 8 ( 3 4 )          DVD
T   1:32:55

OFF
ON →
PASSWORD →
```

4 Press ↑/↓ to select "ON →", then press ENTER.

■If you have not entered a password
The display for registering a new password appears.

```
CUSTOM PARENTAL CONTROL
Enter a new 4-digit password, then
press ENTER.
■ ■ ■ ■
```

Enter a 4-digit password by using the number buttons, then press ENTER. The display for confirming the password appears.

■When you have already registered a password
The display for entering the password appears.

```
CUSTOM PARENTAL CONTROL
Enter password, then press ENTER.
■ ■ ■ ■
```

5 Enter or re-enter your 4-digit password by using the number buttons, then press ENTER.
"Custom parental control is set." appears and then the screen returns to the Control Menu display.

If you make a mistake entering your password
Press ← before you press ENTER and input the correct number.

If you make a mistake
Press RETURN, then start from Step 3 again.

To turn off the Control Menu
Press RETURN, then press DISPLAY repeatedly until the Control Menu is turned off.

To turn off the Custom Parental Control function
1 In Step 4, select "OFF →," then press ENTER.
2 Enter your 4-digit password using the number buttons, then press ENTER.

To change the password
1 In Step 4, press ↑/↓ to select "PASSWORD →," then press ENTER. The display for entering the password appears.
2 Enter your 4-digit password using the number buttons then press ENTER.
3 Enter a new 4-digit password using the number buttons, then press ENTER.
4 To confirm your password, re-enter it using the number buttons, then press ENTER.

Playing the disc for which Custom Parental Control is set

1 Insert the disc for which Custom Parental Control is set.
The CUSTOM PARENTAL CONTROL display appears.

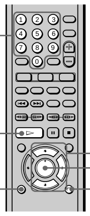
```
CUSTOM PARENTAL CONTROL
Custom parental control is already
set. To play, enter your password
and press ENTER.
■ ■ ■ ■
```

2 Enter your 4-digit password using the number buttons, then press ENTER.
The player is ready for playback.

If you forget your password, enter the 6-digit number "199703" using the number buttons when the CUSTOM PARENTAL CONTROL display asks you for your password, then press ENTER. The display will ask you to enter a new 4-digit password.

Limiting playback by children (Parental Control) DVD

Playback of some DVDs can be limited according to a predetermined level such as the age of the users. The "Parental Control" function allows you to set a playback limitation level.
A scene that is limited is not played, or it is replaced by a different scene.



continued

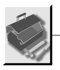
Using Various Additional Functions

1 Press DISPLAY while the player is in stop mode.
The Control Menu appears.

2 Press ↑/↓ to select [icon] (SETUP), then press ENTER.

3 Press ↑/↓ select "CUSTOM", then press ENTER.
The Setup Display appears.

4 Press ↑/↓ to select "CUSTOM SETUP," then press ENTER.
COSTOM SETUP is displayed.



```
CUSTOM SETUP
AUTO PLAY:              OFF
DIMMER:              BRIGHT
PAUSE MODE:            AUTO
PARENTAL CONTROL          →
PLAYBACK MEMORY:         ON
TRACK SELECTION:        OFF
```

5 Press ↑/↓ to select "PARENTAL CONTROL →," then press ENTER.

■If you have not entered a password
The display for registering a new password appears.

```
CUSTOM SETUP
PARENTAL CONTROL
Enter a new 4-digit password, then
press ENTER.
■ ■ ■ ■
```

Enter a 4-digit password using the number buttons, then press ENTER. The display for confirming the password appears.

■When you have already registered a password
The display for entering the password appears.

```
CUSTOM SETUP
PARENTAL CONTROL
Enter password, then press ENTER.
■ ■ ■ ■
```

6 Enter or re-enter your password using the number buttons, then press ENTER.
The display for setting the playback limitation level and changing the password appears.

```
CUSTOM SETUP
PARENTAL CONTROL
LEVEL:                  OFF
STANDARD:               USA
CHANGE PASSWORD           →
```

7 Press ↑/↓ to select "STANDARD," then press ENTER.
The selection items for "STANDARD" are displayed.

```
CUSTOM SETUP
PARENTAL CONTROL
LEVEL:                  OFF
STANDARD:               USA
CHANGE PASSWORD         USA
                     OTHERS →
```

8 Press ↑/↓ to select a geographic area as the playback limitation level, then press ENTER.
The area is selected.
When you select "OTHER →" select and enter the standard code in the table on page 62 using the number buttons.

9 Press ENTER.
The selection items for "LEVEL" are displayed.

```
CUSTOM SETUP
PARENTAL CONTROL
LEVEL:                  OFF
STANDARD:               OFF
CHANGE PASSWORD         8:
                        7:  NC17
                        6:     R
                        5:
```

10 Select the level you want using ↑/↓, then press ENTER.
Parental Control setting is complete.

```
CUSTOM SETUP
PARENTAL CONTROL
LEVEL:               4: PG13
STANDARD:                USA
CHANGE PASSWORD            →
```

The lower the value, the more strict the limitation.

If you make a mistake
Press RETURN to go back to the previous screen.

To turn off the Setup Display
Press DISPLAY repeatedly until the Setup Display is turned off.

To turn off the Parental Control function and play the DVD after entering your password
Set "LEVEL" to "OFF" in Step 10.

To change the password
1 In Step 7, select "CHANGE PASSWORD →" using ↓, then press ENTER. The display for entering the password appears.
2 Follow Step 6 to enter a new password.

Playing the disc for which Parental Control is set

1 Insert the disc and press ▷.
The PARENTAL CONTROL display appears.

2 Enter your 4-digit password using the number buttons, then press ENTER.
The player starts playback.

If you forget your password, remove the disc and repeat Step 1 to 5 of "Limiting playback by children". When you are asked to enter your password, enter "199703" using the number buttons, then press ENTER. The display will ask you to enter a new 4-digit password. After you enter a new 4-digit password in Step 6, replace the disc in the player and press ▷. When the PARENTAL CONTROL display appears, enter your new password.

Notes
- When you play DVDs which do not have the Parental Control function, playback cannot be limited on this player.
- Depending on the DVD, you may be asked to change the parental control level while playing the disc. In this case, enter your password, then change the level. If the Resume Play mode is cancelled, the level returns to the original level.

Using Various Additional Functions

continued

Area Code

Standard	Code number	Standard	Code number
Argentina	2044	Korea	2304
Australia	2047	Malaysia	2363
Austria	2046	Mexico	2362
Belgium	2057	Netherlands	2376
Brazil	2070	New Zealand	2390
Canada	2079	Norway	2379
Chile	2090	Pakistan	2427
China	2092	Philippines	2424
Denmark	2115	Portugal	2436
Finland	2165	Russia	2489
France	2174	Singapore	2501
Germany	2109	Spain	2149
Hong Kong`	2219	Sweden	2499
India	2248	Switzerland	2086
Indonesia	2238	Taiwan	2543
Italy	2254	Thailand	2528
Japan	2276	United Kingdom	2184

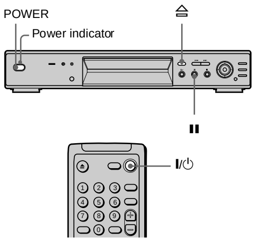
Operation Sound Effects

(Sound Feedback)

The player beeps when the following operations are performed.
The default setting of the Sound Feedback function is set to off.

Operation	Operation sound
Power is turned on	One beep
Power is turned off	Two beeps
▷ is pressed	One beep
❚❚ is pressed	Two beeps
Playback is stopped	One long beep
Operation is not possible	Three beeps

To set Sound Feedback



1 Press POWER on the player, then press I/⏻ on the remote.
The power indicator lights up in green. When there is a disc in the player, press ≜ and remove the disc. Then press ≜ again to close the disc tray.

2 Press and hold ❚❚ on the player for more than two seconds.
You will hear one beep and the Sound Feedback function is turned on.

To turn off the Sound Feedback function

When there is no disc in the player, press and hold ❚❚ on the player for more than two seconds. You will hear two beeps and the Sound Feedback function is turned off.

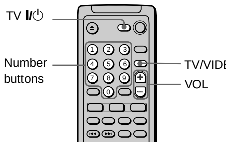
Controlling Your TV or AV Amplifier (Receiver) with the Supplied Remote

By adjusting the remote signal, you can control your TV or AV amplifier (receiver) with the supplied remote.
If you connect the player with a AV amplifier (receiver), you can control the volume with the supplied remote.

Notes

- Depending on the units being connected, you may not be able to control your TV or AV amplifier (receiver) using some of the buttons below.
- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries of the remote, the code number may be reset to the default setting. Reset the appropriate code number.

Controlling TVs with the remote



Hold down TV I/⏻, and enter your TV's manufacturer's code (see the table) using the number buttons. Then release TV I/⏻.

Code numbers of controllable TVs

If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.

continued

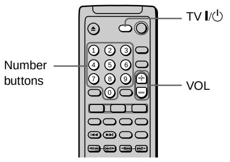
Manufacture	Code number	Manufacture	Code number
Sony (default)	01	Philco	03,04
Akai	04	Philips	08,21
AOC	04	Pioneer	16
Centurion	12	Portland	03
Coronado	03	Quasar	06,18
Curis-Mathes	12	Radio Shack	05,14
Daytron	12	RCA	04,10
Emerson	03,04,14	Sampo	12
Fisher	11	Samsung	20
General Electric	06,10	Sanyo	11
Gold Star	03,04,17	Scott	12
Hitachi	02,03	Sears	07,10,11
J.C.Penney	04,12	Sharp	03,05,18
JVC	09	Sylvania	08,12
KMC	03	Teknika	03,08,14
Magnavox	03,08,12	Toshiba	07
Marantz	04,13	Wards	03,04,12
MGA/Mitsubishi	04,12,13,17	Yorx	12
NEC	04,12	Zenith	15
Panasonic	06,19		

Controlling the TV

You can control your TV using the buttons below.

By pressing	You can
TV I/⏻	Turn the TV on or off
VOL	Adjust the volume of the TV
TV/VIDEO	Switch the TV's input source between the TV and other input sources

Controlling AV amplifiers (receivers) with the remote



Hold down TV I/⏻, and enter your AV receiver's manufacturer's code (see the table) using the number buttons. Then release TV I/⏻.

Code numbers of controllable AV amplifiers (receivers)

If more than one code number is listed, try entering them one at a time until you find the one that works with your AV amplifiers (receiver).

Manufacturer	Code number
Sony	91, 89
Denon	84, 85, 86
Kenwood	92, 93
Onkyo	81, 82, 83
Pioneer	99
Sansui	87
Technics	97, 98
Yamaha	94, 95, 96

Controlling the AV amplifier (receiver)

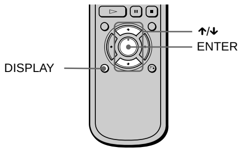
You can change the volume of the AV amplifier (receiver) using VOL +/–.

Using the Setup Display

DVD VIDEO CD CD

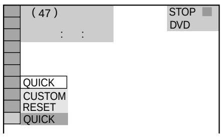
By using the Setup Display, you can make various adjustments to items such as picture and sound. You can also set a language for the subtitles and the Setup Display, among other things. For details on each Setup Display item, see page 66. For an overall list of Setup Display items, see page 83.

How to use the Setup Display

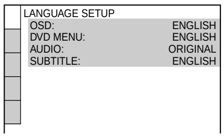


1 Press DISPLAY when the player is in stop mode.
The Control Menu appears.

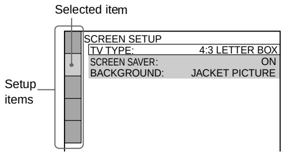
2 Press ↑/↓ to select (SETUP), then press ENTER.
The options for SETUP appear.



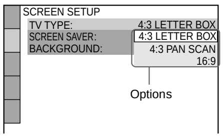
3 Press ↑/↓ to select "CUSTOM" then press ENTER.
The Setup Display appears.



4 Press ↑/↓ to select the setup item from the displayed list: "LANGUAGE SETUP," "SCREEN SETUP," "CUSTOM SETUP," or "AUDIO SETUP," and "SPEAKER SETUP." Then press ENTER.
The selected setup item appears.
Example: "SCREEN SETUP"

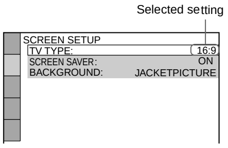


5 Select an item using ↑/↓, then press ENTER.
The options for the selected item appear.
Example: "TV TYPE"



6 Select a setting using ↑/↓, then press ENTER.
The setting is selected and setup is complate.
Example: "16:9"

continued



To turn off the Setup Display

Press DISPLAY repeatedly until the Setup Display is turned off.

💡 If you select "QUICK" in Step 3, you will enter the Quick Setup mode (page 25). Follow from Step 5 of the Quick Setup explanation to make basic adjustments.

💡 If you select "RESET" in Step 3, you can reset all of the "SETUP" settings on page 83 to 85 (except for PARENTAL CONTROL) to the default settings. After you select "RESET" and press ENTER, select "YES" to reset the settings (it takes a few seconds to complete), or select "NO" and press ENTER to return to the Control Menu. Do not press POWER or I/⏻ when resetting the player.

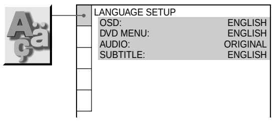
Setting the Display or Sound Track Language

(LANGUAGE SETUP)

DVD VIDEO CD CD

"LANGUAGE SETUP" allows you to set various languages for the on-screen display or sound track.

Select "LANGUAGE SETUP" in the Setup Display. For details on using the display, see "Using the Setup Display" (page 65).



■OSD (On-Screen Display)

Switches the display language on the screen. Selects the language from the displayed list.

■DVD MENU (DVD only)

You can select the desired language for the DVD menu.

■AUDIO (DVD only)

Switches the language of the sound track. Selects the language from the displayed list. When you select "ORIGINAL," the language given priority in the disc is selected.

■SUBTITLE (DVD only)

Switch the language of the subtitle. Select the language from the displayed list. When you select "AUDIO FOLLOW," the language for the subtitles changes according to the language you selected for the sound track.

💡 If you select "OTHERS →" in "DVD MENU," "SUBTITLE," and "AUDIO," select and enter the language code from the list using the number buttons (page 82).
After you have made a selection, the language code (4 digits) is displayed the next time you select "OTHERS →."

Note

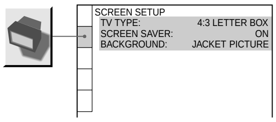
When you select a language that is not recorded on the DVD, one of the recorded languages will be automatically selected (except for the "OSD").

Settings for the Display

(SCREEN SETUP) DVD VIDEO CD CD

Choose settings according to the TV to be connected.

Select "SCREEN SETUP" in the Setup Display. For details on using the display, see "Using the Setup Display" (page 65).
The default settings are underlined.



■TV TYPE (DVD only)

Selects the aspect ratio of the connected TV (4:3 standard or wide).

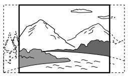
<u>4:3 LETTER BOX</u>	Select this when you connect a 4:3 screen TV. Displays a wide picture with bands on the upper and lower portions of the screen.
4:3 PAN SCAN	Select this when you connect a 4:3 screen TV. Automatically displays the wide picture on the entire screen and cuts off the portions that do not fit.
16:9	Select this when you connect a wide-screen TV or a TV with a wide mode function.

Settings and Adjustments

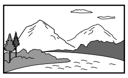
continued

4:3 LETTER BOX

4:3 PAN SCAN



16:9



Note

Depending on the DVD, "4:3 LETTER BOX" may be selected automatically instead of "4:3 PAN SCAN" or vice versa.

■SCREEN SAVER

Turns on and off the screen saver so that the screen saver image appears when you leave the player in pause or stop mode for 15 minutes, or when you play back a CD for more than 15 minutes. The screen saver will help prevent your display device from becoming damaged (ghosting). Press ▷ to turn off the screen saver.

<u>ON</u>	Turns on the screen saver.
OFF	Turns off the screen saver.

■BACKGROUND

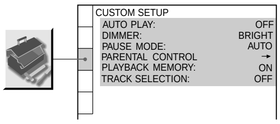
Selects the background color or picture on the TV screen in stop mode or while playing a CD.

<u>JACKET PICTURE</u>	The jacket picture (still picture) appears in the background, but only when the jacket picture is already recorded on the disc (CD-EXTRA etc.). If the disc does not contain a jacket picture, the "GRAPHICS" picture appears.
GRAPHICS	A preset picture stored in the player appears in the background.
BLUE	The background color is blue.
BLACK	The background color is black.

Custom Settings (CUSTOM SETUP) DVD VIDEO CD CD

Allows setting up Parental Control and other settings.

Select "CUSTOM SETUP" in the Setup Display. For details on using the display, see "Using the Setup Display" (page 65).
The default settings are underlined.



■AUTO PLAY

Selects the Auto Play setting when you turn on the player.

<u>OFF</u>	Does not use "TIMER," "DEMO1," or "DEMO2" to start playback.
TIMER	Starts playing when the player is turned on. The player can be played at any time when connected to a timer (not supplied). Set the timer when the player is in standby mode (the power indicator lights up in red).
DEMO1	Starts playing the first demonstration automatically.
DEMO2	Starts playing the second demonstration automatically.

■DIMMER

Adjusts the lighting of the front panel display.

<u>BRIGHT</u>	Makes the front panel display bright.
DARK	Makes the front panel display dark.
OFF	Turns off the lighting of the front panel display.

■PAUSE MODE (DVD only)

Selects the picture in pause mode.

<u>AUTO</u>	The picture, including subjects that move dynamically, is output with no jitter. Normally select this position.
FRAME	The picture, including subjects that do not move dynamically, is output in high resolution.

■PARENTAL CONTROL → (DVD only)

Set a password and playback limitation level for DVDs with playback limitation for children. For details, see "Limiting playback by children (Parental Control)" (page 59).

■PLAYBACK MEMORY

The player can store the SUBTITLE and other settings of each disc for up to 50 discs (Playback Memory).
Set the Playback Memory function on or off.

<u>ON</u>	Stores the settings in memory when you eject the disc.
OFF	Does not store the settings in memory.

The following settings are stored in memory by the Playback Memory function.
— AUDIO (page 48)*
— BNR (page 56)
— DIGITAL VIDEO ENHANCER (page 57)
— SUBTITLE (page 55)*
— SURROUND (page 50)
*DVD only

Notes

- The player can store the settings of up to 50 discs. When you store the setting of disc number 51, the first disc setting is canceled.
- Depending on the DVD, the information stored in the disc takes priority over the Playback Memory settings and the function does not work.
- During playback, do not turn off the player by pressing POWER on the player. Doing so may cancel the settings. When you turn off the player, press ■ first to stop playback and then press I/⏻ on the remote. After the power indicator lights up in red and the player enters standby mode, press POWER on the player.

■TRACK SELECTION (DVD only)

Gives the sound track which contains the highest number of channels priority when you play a DVD on which multiple audio formats (PCM, DTS, or Dolby Digital format) are recorded.

<u>OFF</u>	No priority given.
AUTO	Priority given.

Notes

- When you set the item to "AUTO," the language may change. The "TRACK SELECTION" setting has higher priority than the "AUDIO" settings in "LANGUAGE SETUP" (page 66).
- If you set "DTS" to "OFF" (page 71), the DTS sound track is not played even if you set "TRACK SELECTION" to "AUTO".
- If PCM, DTS and Dolby Digital sound tracks have the same number of channels, the player selects PCM, DTS and Dolby Digital sound tracks in this order.
- Depending on the DVD, the audio channel with priority may be predetermined. In this case, you cannot give priority to the DTS, Dolby Digital, or format by selecting "AUTO."

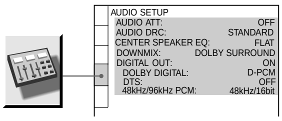
Settings and Adjustments

Settings for the Sound

(AUDIO SETUP)

"AUDIO SETUP" allows you to set the sound according to the playback and connection conditions.

Select "AUDIO SETUP" in the Setup Display. For details on using the display, see "Using the Setup Display" (page 65).
The default settings are underlined.



■AUDIO ATT (attenuation)

If the playback sound is distorted, set this item to "ON." The player reduces the audio output level.
This function affects the output of the following jacks:
— LINE OUT L/R (AUDIO) 1/2 jacks
— 5.1CH OUTPUT jacks

OFF	Turns off the audio attenuation. Normally, select this position.
ON	Reduces the audio output level so that no sound distortion occurs. Select this when the playback sound from the speakers is distorted.

■AUDIO DRC (Dynamic Range Control) (DVD only)

Makes the sound clear when the volume is turned down when playing a DVD that has the AUDIO DRC function. This affects the output from the following jacks:
— LINE OUT L/R (AUDIO) 1/2 jacks
— 5.1CH OUTPUT jacks
— DIGITAL OUT (OPTICAL or COAXIAL) jack only when "DOLBY DIGITAL" is set to "D-PCM" (page 71).

STANDARD	Normally, select this position.
TV MODE	Makes the low sounds clear even if you turn the volume down. It is especially recommended when you listen to the sound using the speakers of the TV.
WIDE RANGE	Gives you the feeling of being at a live performance. When you use high quality speakers, it is even more effective.

■CENTER SPEAKER EQ (equalizer)

Makes the spoken track clear when speech is difficult to hear. This function affects the output to the center speaker that is connected to 5.1CH OUTPUT.

FLAT	Outputs the spoken track as it was recorded.
ENHANCED	Enhances the spoken track only.
SOFT	Makes the sound softer by rounding out the sound frequency above 8kHz. Select this when the spoken track sounds shrill.

■DOWNMIX (DVD only)

Switches the mixing down methods when you play a DVD on which rear signal components such as LS, RS, or S are recorded in Dolby Digital format. For details on the rear signal components, see "Changing the Sound" (page 48). This function affects the output of the following jacks:
— LINE OUT L/R (AUDIO) 1/2 jacks
— DIGITAL OUT (OPTICAL or COAXICAL) jack when "DOLBY DIGITAL" is set to "D-PCM" (page 71).

DOLBY SURROUND	Select this when the player is connected to an audio component that conforms to Dolby Surround (Pro Logic). The output signals which reproduce the Dolby Surround effect are downmixed to 2 channels.
NORMAL	Select this when the player is connected to an audio component that does not conform to Dolby Surround (Pro Logic). All of the output signals are downmixed to 2 channels without the Dolby Surround (Pro Logic) effect.

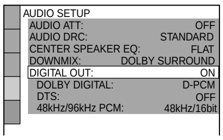
■DIGITAL OUT

Selects if audio signals are output via the DIGITAL OUT (OPTICAL or COAXIAL) jack.

ON	Normally, select this position. When you select "ON," set "DOLBY DIGITAL," "DTS," and "48kHz/96kHz PCM". For details on setting these items, see "Setting the digital output signal."
OFF	The player does not output the audio signals via the DIGITAL OUT (OPTICAL or COAXIAL) jack. The influence of the digital circuit upon the analog circuit is minimal.

Setting the digital output signal

Switches the method of outputting audio signals when you connect the following component using an optical or a coaxial digital cord via the DIGITAL OUT (OPTICAL or COAXIAL) jack.
— Amplifier (receiver) with digital input jack
— Amplifier (receiver) with a built-in DTS or DOLBY DIGITAL decoder
— MD or DAT deck
For connection details, see page 19.
Select "DOLBY DIGITAL," and "DTS" after setting "DIGITAL OUT" to "ON."



■DOLBY DIGITAL

Selects the Dolby Digital signals output via the DIGITAL OUT (OPTICAL or COAXIAL) jack.

D-PCM	Select this when the player is connected to an audio component lacking a built-in Dolby Digital decoder. You can select whether the signals conform to Dolby Surround (Pro Logic) or not by making adjustments to the "DOWNMIX" item in "AUDIO SETUP." (page 70)
DOLBY DIGITAL	Select this when the player is connected to an audio component with a built-in Dolby Digital decoder. If the player is connected to an audio component lacking a built-in Dolby Digital decoder, do not set this. Otherwise, when you play the Dolby Digital sound track, a loud noise (or no sound) will come out from the speakers, affecting your ears or causing the speakers to be damaged.

■DTS

Select if DTS signals are output via the DIGITAL OUT (OPTICAL and COAXIAL) jack.

OFF	Select this when the player is connected to an audio component lacking a built-in DTS decoder. Note, however, that the DTS signals contained in a CD are output even if "OFF" is selected.
ON	Select this when the player is connected to an audio component having a built-in DTS decoder. If the player is connected to an audio component lacking a built-in DTS decoder, do not set this. Otherwise, when you play the DTS sound track, a loud noise (or no sound) will come out from the speakers, affecting your ears or causing the speakers to be damaged.

continued

■48kHz/96kHz PCM (DVD only)

Selects the sampling frequency of the audio signal to be output via the DIGITAL OUT (OPTICAL or COAXIAL) jacks.

48kHz/16bit	The audio signals of DVDs are always converted to 48kHz/16 bit.
96kHz/24bit	All types of signals including 96kHz/24bit are output in their original format. However, if the signal is encrypted for copyright protection purposes, the signal is only output as 48 kHz/16 bit. If a receiver (amplifier) which cannot accept 96Hz is connected to the player, do not set this. Otherwise, a loud noise may come out from the speakers.

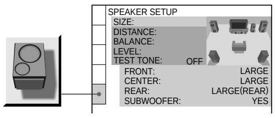
Notes
- Even if you set "48kHz/96kHz PCM" in "AUDIO SETUP" to "96kHz/24bit," the sampling frequency is converted to 48kHz/16bit when a SURROUND mode (page 50) is selected.
- The analog audio signals from the LINE OUT L/R (AUDIO) 1/2 jacks are not affected by this setting and keep their original sampling frequency level.

Settings for the Speakers

(SPEAKER SETUP)

To obtain the best possible surround sound, set the size of the speakers you have connected and their distance from your listening position. Then use the test tone to adjust the volume and the balance of the speakers to the same level.
This setting is effective when connecting the speaker with 5.1CH OUTPUT jacks (page 21).

Select "SPEAKER SETUP" in the Setup Display. For details, see "Using the Setup Display" (page 65).
The default settings are underlined.



To return to the default setting

Select the item, then press CLEAR.

■SIZE

Selects the size of the speakers to be connected.
• FRONT

LARGE	Normally select this position.
SMALL	When the sound cracks or the surround sound effects are difficult to hear, select this. This activates the Dolby Digital bass redirection circuitry and outputs the bass frequencies of the front speaker from the subwoofer.

• CENTER

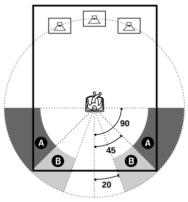
NONE	If you do not connect a center speaker, select this.
LARGE	Normally select this position.
SMALL	When the sound cracks or the surround sound effects are difficult to hear, select this. This activates the Dolby Digital bass redirection circuitry and outputs the bass frequencies of the center speaker from other speakers.

• REAR

NONE	If you do not connect rear speakers, select this.
LARGE	(REAR/SIDE): Normally select this position. Select either of these according to the rear speaker's position*.
SMALL	(REAR/SIDE): When the sound cracks or the surround sound effects are difficult to hear, select this. Select either of these according to the rear speaker's position*. This activates the Dolby Digital bass redirection circuitry and outputs the bass frequencies of the rear speaker from other speakers.

* Rear speaker position (REAR/SIDE)
Correctly specify the location of the rear speakers to enjoy the SURROUND effect.
•Set to the "SIDE," if the location of the rear speakers corresponds to section Ⓐ below.
•Set to the "REAR," if the location of the rear speakers corresponds to section Ⓑ below.

This setting affects only "VIRTUAL REAR SHIFT," "VIRTUAL MULTI REAR," and "VIRTUAL MULTI DIMENSION" mode (page 51).



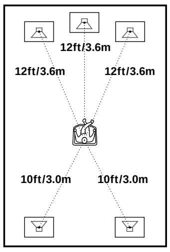
• SUBWOOFER

NONE	If you do not connect a subwoofer, select this. This activates the Dolby Digital bass redirection circuitry and outputs the LFE signals from the front speakers as long as the front speaker size is set to "LARGE."
YES	If you connect a subwoofer, select this to output the LFE (low frequency effect) channel from the subwoofer. When you set the other speakers settings to "SMALL," the subwoofer makes up for the missing bass frequencies of the speakers.

Notes
- The cut off frequency for the subwoofer is fixed at 120 Hz.
- If your speakers are too small to reproduce low bass frequencies, please set all speaker settings to "SMALL" and utilize a subwoofer for low frequency sound.
- Even if there are fewer than 6 speakers connected, the player distributes the audio signal components to the front speakers.

■DISTANCE

The default distance setting for the speakers in relation to the listening position is shown below.



Be sure to change the value in the Setup Display when you move the speakers. The default adjustments are in parentheses.

continued

FRONT (12ft/3.6m)	Front speaker distance from the listening position can be set in 1 foot (0.3 meter) increments from 4 to 50 feet (1.2 to 15.2 meters).
CENTER (12ft/3.6m)	Center speaker distance can be moved up to 2 feet (0.6 meters) backward from the front speakers or 5 feet (1.5 meters) forward closer to the listening position, in 1 foot (0.3 meter) increments.
REAR (10ft/3m)	Rear speaker distance can be moved up to 16 feet (4.8 meters) closer to your listening position from the front speaker position, in 1 foot (0.3 meter) increments.

Notes

- If each or the front or rear speakers are not placed at an equal distance from your listening position, set the distance according to the closest speaker.
- Do not place the rear speakers farther away from your listening position than the front speakers.

■BALANCE

You can vary the balance of the left and right speakers as follows. Be sure to set "TEST TONE" to "ON" for easy adjustment.
The default adjustments are in parentheses.

FRONT (0dB)	Adjust the balance between the front left and right speakers (–6dB [L] to +6dB [R], 0.5dB increments).
REAR (0dB)	Adjust the balance between the rear left and right speakers (–6dB [L] to +6dB [R], 0.5dB increments).

■LEVEL

You can vary the level of each speaker as follows. Be sure to set "TEST TONE" to "ON" for easy adjustment.
The default adjustments are in parentheses.

CENTER (0dB)	Adjust the level of the center speaker (–6dB to +6dB, 0.5dB increments).
REAR (0dB)	Adjust the level of the rear speakers (–6dB to +6dB, 0.5dB increments).
SUBWOOFER (0dB)	Adjust the level of the subwoofer (–10dB to +10dB, 0.5dB increments).

To adjust the volume of all the speakers at one time

Use the amplifier's (receiver's) volume control.

■TEST TONE

The speakers will emit a test tone. Use this when you use the 5.1CH OUTPUT jacks and adjust the "BALANCE" and "LEVEL".

OFF	The test tone is not emitted from the speakers.
ON	The test tone is emitted from each speaker in sequence while adjusting balance or level. When you select one of the "SPEAKER SETUP" items, the test tone is emitted from both left and right speakers simultaneously.

Adjusting the speaker volume and level

1 After you stop playback, select "SPEAKER SETUP" in the Setup Display.

2 Select "TEST TONE" and set "TEST TONE" to "ON."
You will hear the test tone from each speaker in sequence.

3 From your listening position, select "BALANCE" or "LEVEL" and adjust the value of "BALANCE" using ←/→ and "LEVEL" using ↑/↓.
The test tone is emitted from both left and right speakers simultaneously.

4 Select "TEST TONE" and set "TEST TONE" to "OFF" to turn off the test tone.

Note

When you adjust the speaker settings, the sound cuts off for a moment.

Troubleshooting

If you experience any of the following difficulties while using the player, use this troubleshooting guide to help remedy the problem before requesting repairs. Should any problem persist, consult your nearest Sony dealer.

Power

The power is not turned on.
➡ Check that the AC power cord is connected securely.

Picture

There is no picture.
➡ The connecting cords are not connected securely.
➡ The connecting cords are damaged.
➡ The player is not connected to the correct TV input jack (page 17).
➡ The video input on the TV is not set so that you can view pictures from the player.

Picture noise appears.
➡ The disc is dirty or flawed.
➡ If the picture output from your player goes through your VCR to get to your TV, the copy-protection signal applied to some DVD programs could affect picture quality. If you still experience problems even when you connect your player directly to your TV, please try connecting your player to your TV's S video input (page 17).

Even though you set the aspect ratio in "TV TYPE" of "SCREEN SETUP," the picture does not fill the screen.
➡ The aspect ratio of the disc is fixed on your DVD.

Sound

There is no sound.
➡ The connecting cord is not connected securely.
➡ The connecting cord is damaged.
➡ The player is connected to the wrong input jack on the amplifier (receiver) (page 21, 23, 24).
➡ The amplifier (receiver) input was not changed so that you can listen to the player.
➡ The player is in pause mode or in Slow-motion play mode.
➡ The player is in fast forward or fast reverse mode.
➡ If the audio signal does not come through the DIGITAL OUT (OPTICAL or COAXIAL) jack, check the audio settings (page 71).

Sound is noisy.
➡ The disc is dirty or flawed.
➡ When playing a CD with DTS sound tracks, noise will come from the LINE OUT L/R (AUDIO) 1/2 jacks (page 31).

Sound distortion occurs.
➡ Set "AUDIO ATT" in "AUDIO SETUP" to "ON" (page 70).

The surround effect is difficult to hear when you are playing a Dolby Digital sound track.
➡ Check the speaker connections and setting (page 21, 27, 71)
➡ Depending on the DVD, the output signal may not be the entire 5.1 channels. It may be monaural or stereo even if the sound track is recorded in Dolby Digital format.

The sound comes from the center speaker only.
➡ Depending on the disc, the sound may come from the center speaker only.
➡ Set "SURROUND"to "OFF" in the Control Menu display (page50).

Operation

The remote does not function.
➡ There are obstacles between the remote and the player.
➡ The distance between the remote and the player is too far.
➡ The remote is not pointed at the remote sensor on the player.
➡ The batteries in the remote are weak.

The disc does not play.
➡ There is no disc inside.
➡ The disc is turned over.
Insert the disc with the playback side facing down on the disc tray.
➡ The disc is skewed.
➡ The player cannot play CD-ROMs, etc. (page 6).
➡ The region code on the DVD does not match the player.
➡ Moisture has condensed inside the player. Remove the disc and leave the player turned on for about half an hour. Turn on the power again before playing the disc (page 3).

The disc does not start playing from the beginning.
➡ Program Play, Shuffle Play, Repeat Play, or A-B Repeat Play has been selected (page 35). Press CLEAR to cancel these functions before playing a disc.
➡ Resume Play has been selected.
During stop, press ■ on the player or the remote and then start playback DVD (page 32).
➡ The title, DVD or PBC menu automatically appears on the TV screen.

The player starts playing the disc automatically.
➡ The DVD features an auto playback function.
➡ "AUTO PLAY" in "CUSTOM SETUP" is set to "TIMER" (page 68).

Playback stops automatically.
➡ Some discs may contain an auto pause signal. While playing such a disc, the player stops playback at the auto pause signal.

You cannot perform some functions such as stop, Search, Slow-motion play, Repeat Play, Shuffle Play, or Program Play.
➡ Depending on the disc, you may not be able to do some of the operations above. See the operating manual that comes with the disc.

Messages do not appear on the screen in the language you want.
➡ In the Setup Display, select the desired language for the on-screen display in "OSD" under "LANGUAGE SETUP" (page 66).

The language for the sound track cannot be changed.
➡ Multilingual tracks are not recorded on the DVD being played.
➡ The DVD prohibits the changing of the language for the sound track.

The subtitle language cannot be changed.
➡ Multilingual subtitles are not recorded on the DVD being played.
➡ The DVD prohibits the changing of the subtitles.

The subtitle cannot be turned off.
➡ The DVD prohibits the subtitles being turned off.

continued

The angles cannot be changed.

➡ Multi-angles are not recorded on the DVD being played. The angle can be changed when the "ANGLE" indicator lights up on the front panel display (page 9).

➡ The DVD prohibits changing of the angles.

The player does not operate properly.

➡ When static electricity, etc., causes the player to operate abnormally, press POWER on the player to turn the player off and then on again.

Nothing is displayed on the front panel display.

➡ "DIMMER" in "CUSTOM SETUP" is set to "OFF." Set "DIMMER" to "BRIGHT" or "DARK" (page 68).

5 numbers or letters are displayed on the screen and on the front panel display.

➡ The self-diagnosis function was activated. (See the table on page 78.)

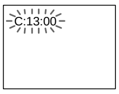
The disc tray does not open and "LOCKED" appears on the front panel display.

➡ Contact your Sony dealer or local authorized Sony service facility.

Self-diagnosis Function

(When letters/numbers appear in the display)

When the self-diagnosis function is activated to prevent the player from malfunctioning, a five-character service number (e.g., C 13 00) with a combination of a letter and digits appears on the screen and the front panel display. In this case, check the following table.



First three characters of the service number	Cause and/or Corrective Action
C 13	The disc is dirty. ➡ Clean the disc with a soft cloth (page 7).
C 31	The disc is not inserted correctly. ➡ Re-insert the disc correctly.
E XX (xx is a number)	To prevent a malfunction, the player has performed the self-diagnosis function. ➡ Contact your nearest Sony dealer or local authorized Sony service facility and give the 5-character service number. Example: E 61 10

Glossary

Chapter (page 9)

Sections of a picture or a music feature that are smaller than titles. A title is composed of several chapters. Depending on the disc, no chapters may be recorded.

Digital Cinema Sound (DCS) (page 51)

Technology that Sony developed to enjoy surround sound in a home using 4 or more speakers. It simulates the sound of a movie editing studio instead of the usual concert hall so that you can enjoy the surround sound of a movie theater in the comfort of your own home.

Dolby Digital (page 21, 71)

Digital audio compression technology developed by Dolby Laboratories. This technology conforms to 5.1-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. Dolby Digital provides the same 5.1 discrete channels of high quality digital audio found in Dolby Digital cinema audio systems. Good channel separation is realized because all of the channel data are recorded discretely and little deterioration is realized because all channel data processing is digital.

Dolby Surround (Pro Logic) (page 24)

Audio signal processing technology that Dolby Laboratories developed for surround sound. When the input signal contains a surround component, the Pro Logic process outputs the front, center and rear signals. The rear channel is monaural.

DTS (page 21, 71)

Digital audio compression technology that Digital Theater Systems, Inc. developed. This technology conforms to 5.1-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. DTS provides the same 5.1 discrete channels of high quality digital audio.
Good channel separation is realized because all of the channel data is recorded discretely and little deterioration is realized because all channel data processing is digital.

DVD (page 6)

A disc that contains up to 8 hours of moving pictures even though its diameter is the same as a CD.
The data capacity of a single-layer and single-sided DVD is 4.7 GB (Giga Byte), which is 7 times that of a CD. The data capacity of a double-layer and single-sided DVD is 8.5 GB, a single-layer and double-sided DVD is 9.4 GB, and double-layer and double-sided DVD is 17GB.
The picture data uses the MPEG 2 format, one of the worldwide standards of digital compression technology. The picture data is compressed to about 1/40 (average) of its original size. The DVD also uses a variable rate coding technology that changes the data to be allocated according to the status of the picture. Audio information is recorded in Dolby Digital as well as in PCM, allowing you to enjoy a more real audio presence.
Furthermore, various advanced functions such as the multi-angle, multilingual, and Parental Control functions are provided with the DVD.

Index (CD)/Video Index (VIDEO CD) (page 9)

A number that divides a track into sections to easily locate the point you want on a VIDEO CD or CD. Depending on the disc, no index may be recorded.

Parental Control (page 59)

A function of the DVD used to limit playback of the disc according to the age of the user and the limitation level in each country. The limitation varies from disc to disc; when it is activated, or playback is completely prohibited, violent scenes are skipped or replaced with other scenes, etc.

continued

Region Code (page 6)

This system is used to protect the copyrights. A region number is allocated on each DVD player or DVD disc according to the sales region. Each region code is shown on the player as well as on the disc packaging. The player can play the discs that match its region code. The player can also play discs with the " " mark. Even when the region code is not shown on the DVD, the region limit may still be activated.

Scene (page 9)

On a VIDEO CD with PBC (playback control) functions, the menu screens, moving pictures and still pictures are divided into sections called "scenes."

Title (page 9)

The longest section of a picture or music feature on a DVD, movie, etc., in video software, or the entire album in audio software.

Track (page 9)

Sections of a picture or a music feature on a VIDEO CD or CD (the length of a song).

TV Virtual Surround (TVS) (page 50)

Technology from Sony developed to produce surround sound for home use using just a stereo TV. Designed to work with the sound characteristics of your TV, this technology brings the excitement of surround sound to your home using nothing more than your stereo TV's internal speakers. Furthermore, various TVS modes are available. For example, TVS WIDE uses just two speakers to create a virtual sound environment that makes you feel like you are surrounded by multiple steakers.

Language Code List

For details, see page 48, 55, 66.
The language spellings conform to the ISO 639: 1988 (E/F) standard.

Code	Language	Code	Language	Code	Language	Code	Language
1027	Afar	1183	Irish	1347	Maori	1507	Samoan
1028	Abkhazian	1186	Scots Gaelic	1349	Macedonian	1508	Shona
1032	Afrikaans	1194	Galician	1350	Malayalam	1509	Somali
1039	Amharic	1196	Guarani	1352	Mongolian	1511	Albanian
1044	Arabic	1203	Gujarati	1353	Moldavian	1512	Serbian
1045	Assamese	1209	Hausa	1356	Marathi	1513	Siswati
1051	Aymara	1217	Hindi	1357	Malay	1514	Sesotho
1052	Azerbaijani	1226	Croatian	1358	Maltese	1515	Sundanese
1053	Bashkir	1229	Hungarian	1363	Burmese	1516	Swedish
1057	Byelorussian	1233	Armenian	1365	Nauru	1517	Swahili
1059	Bulgarian	1235	Interlingua	1369	Nepali	1521	Tamil
1060	Bihari	1239	Interlingue	1376	Dutch	1525	Telugu
1061	Bislama	1245	Inupiak	1379	Norwegian	1527	Tajik
1066	Bengali; Bangla	1248	Indonesian	1393	Occitan	1528	Thai
1067	Tibetan	1253	Icelandic	1403	(Afan)Oromo	1529	Tigrinya
1070	Breton	1254	Italian	1408	Oriya	1531	Turkmen
1079	Catalan	1257	Hebrew	1417	Punjabi	1532	Tagalog
1093	Corsican	1261	Japanese	1428	Polish	1534	Setswana
1097	Czech	1269	Yiddish	1435	Pashto; Pushto	1535	Tonga
1103	Welsh	1283	Javanese	1436	Portuguese	1538	Turkish
1105	Danish	1287	Georgian	1463	Quechua	1539	Tsonga
1109	German	1297	Kazakh	1481	Rhaeto-Romance	1540	Tatar
1130	Bhutani	1298	Greenlandic	1482	Kirundi	1543	Twi
1142	Greek	1299	Cambodian	1483	Romanian	1557	Ukrainian
1144	English	1300	Kannada	1489	Russian	1564	Urdu
1145	Esperanto	1301	Korean	1491	Kinyarwanda	1572	Uzbek
1149	Spanish	1305	Kashmiri	1495	Sanskrit	1581	Vietnamese
1150	Estonian	1307	Kurdish	1498	Sindhi	1587	Volapük
1151	Basque	1311	Kirghiz	1501	Sangho	1613	Wolof
1157	Persian	1313	Latin	1502	Serbo-Croatian	1632	Xhosa
1165	Finnish	1326	Lingala	1503	Singhalese	1665	Yoruba
1166	Fiji	1327	Laothian	1505	Slovak	1684	Chinese
1171	Faroese	1332	Lithuanian	1506	Slovenian	1697	Zulu
1174	French	1334	Latvian; Lettish				
1181	Frisian	1345	Malagasy			1703	Not specified

List of Setup Display Items

The default settings are underlined.

LANGUAGE SETUP (page 66)

OSD	ENGLISH FRENCH SPANISH PORTUGUESE
DVD MENU	ENGLISH FRENCH SPANISH PORTUGUESE GERMAN ITALIAN DUTCH CHINESE JAPANESE DANISH SWEDISH FINNISH NORWEGIAN RUSSIAN OTHERS →
AUDIO	ORIGINAL (All other selections are same as the DVD MENU language.)
SUBTITLE	AUDIO FOLLOW (All other selections are same as the DVD MENU language.)

SCREEN SETUP (page 67)

TV TYPE	4:3 LETTER BOX 4:3 PAN SCAN 16:9
SCREEN SAVER	ON OFF
BACKGROUND	JACKET PICTURE GRAPHICS BLUE BLACK

CUSTOM SETUP (page 68)

AUTO PLAY	OFF TIMER DEMO1 DEMO2
DIMMER	BRIGHT DARK OFF
PAUSE MODE	AUTO FRAME
PARENTAL CONTROL →	
PLAYBACK MEMORY	ON OFF
TRACK SELECTION	OFF AUTO

AUDIO SETUP (page 70)

AUDIO ATT	OFF ON		
AUDIO DRC	STANDARD TV MODE WIDE RANGE		
CENTER SPEAKER EQ	FLAT ENHANCED SOFT		
DOWNMIX	DOLBY SURROUND NORMAL		
DIGITAL OUT	ON	DOLBY DIGITAL	D-PCM DOLBY DIGITAL
		DTS	OFF ON
		48kHz/96kHz PCM	48kHz/16bit 96kHz/24bit
	OFF		

continued

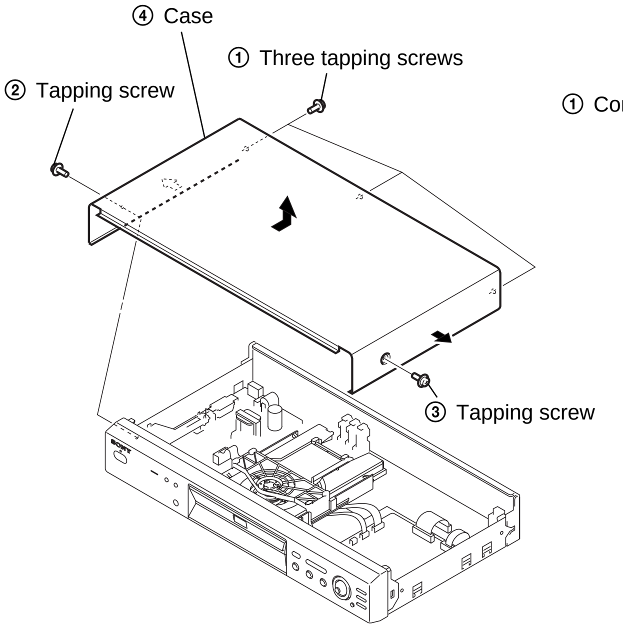
SPEAKER SETUP (page 72)

SIZE	FRONT	LARGE SMALL
	CENTER	NONE LARGE SMALL
	REAR	NONE LARGE (REAR) LARGE (SIDE) SMALL (REAR) SMALL (SIDE)
	SUBWOOFER	NONE YES
DISTANCE (The distance from the listening position.)	FRONT	4ft ~ 50ft (1.2m ~ 15.2m)
	CENTER	0ft ~ 52ft (0m ~ 15.8m) (It changes according to the distance from the front speaker.)
	REAR	0ft ~ 50ft (0m ~ 15.2m) (It changes according to the distance from the front speaker.)
BALANCE	FRONT	- 6dB ~ + 6dB
	REAR	- 6dB ~ + 6dB
LEVEL	CENTER	- 6dB ~ + 6dB
	REAR	- 6dB ~ + 6dB
	SUBWOOFER	- 10dB ~ + 10dB
TEST TONE	OFF ON	

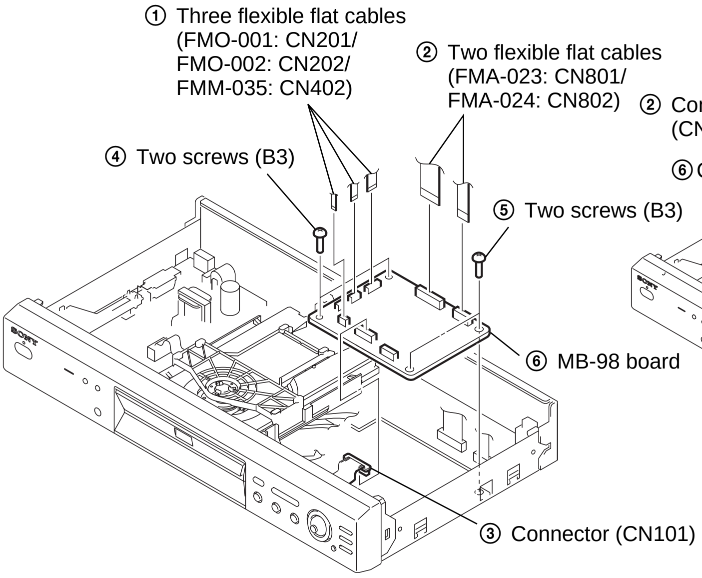
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

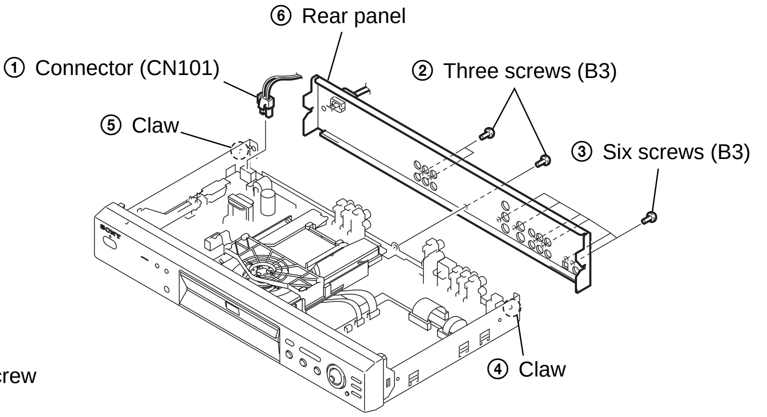
2-1. CASE REMOVAL



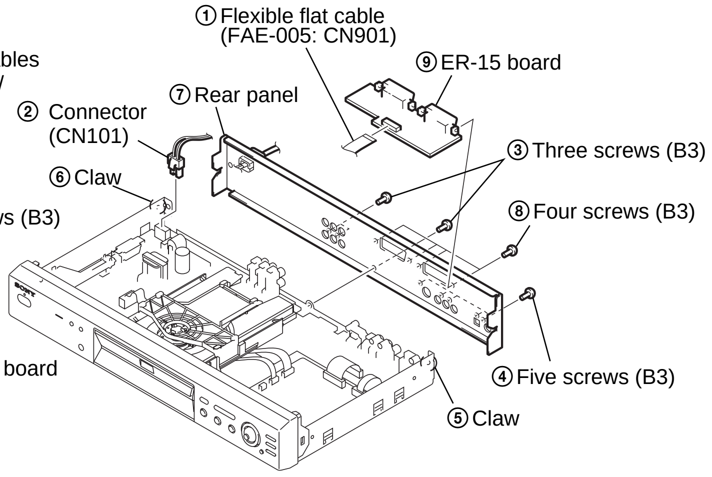
2-2. MB-98 BOARD REMOVAL



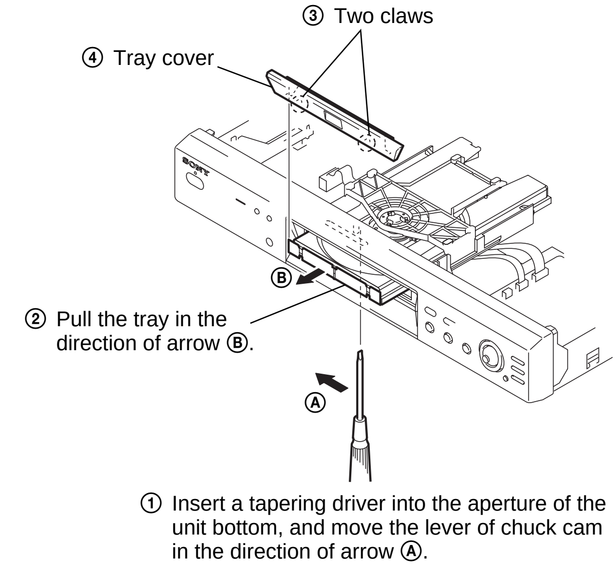
2-3. REAR PANEL REMOVAL (EXCEPT AEP, UK)



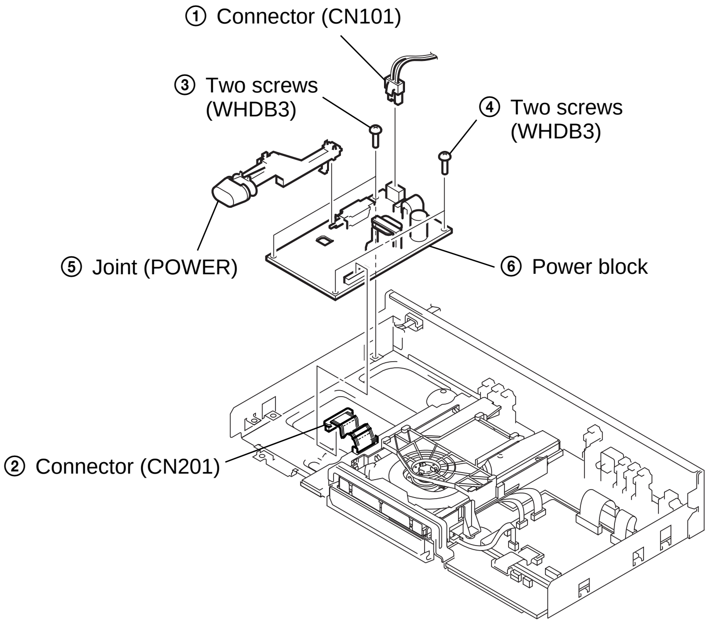
2-4. REAR PANEL, ER-15 BOARD REMOVAL (AEP, UK)



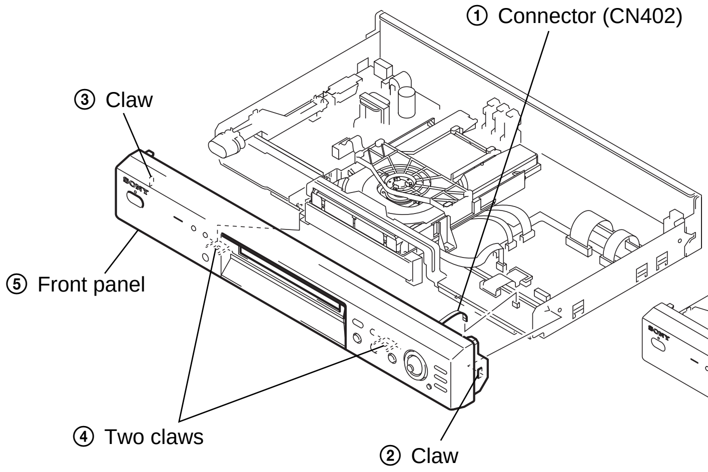
2-5. TRAY COVER REMOVAL



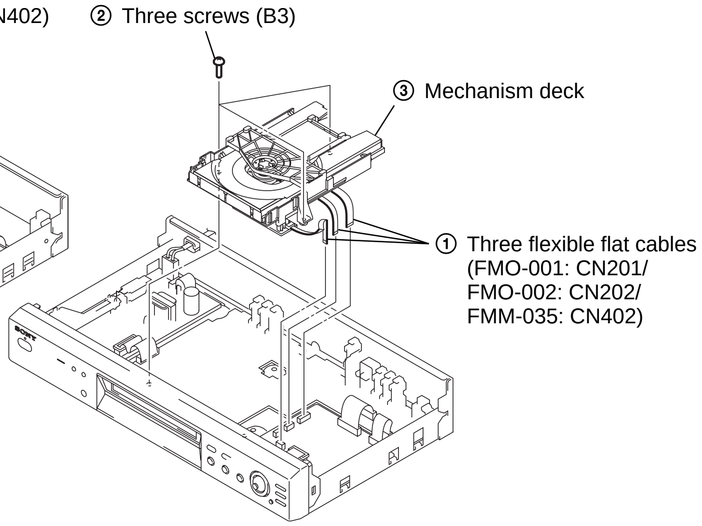
2-7. POWER BLOCK REMOVAL



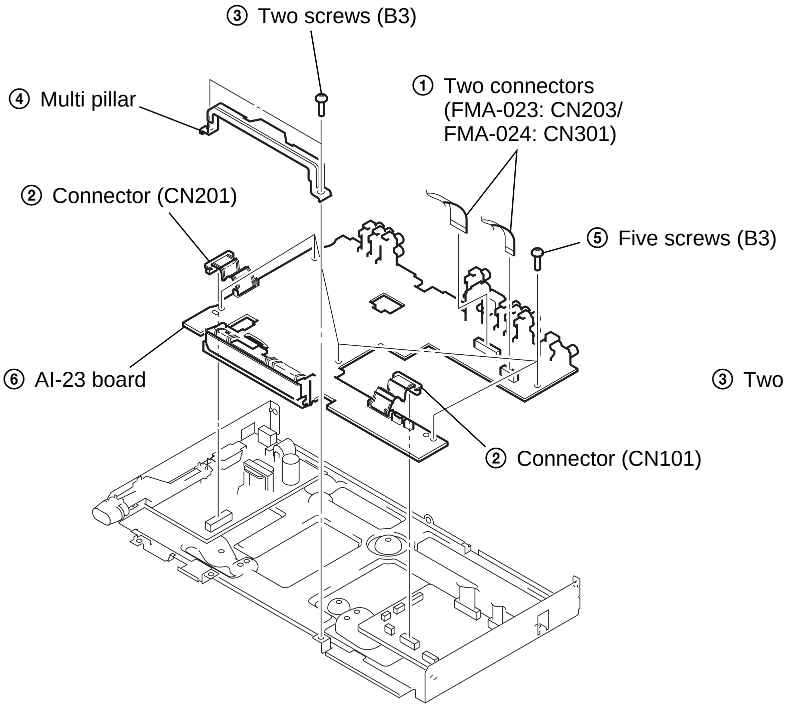
2-6. FRONT PANEL REMOVAL



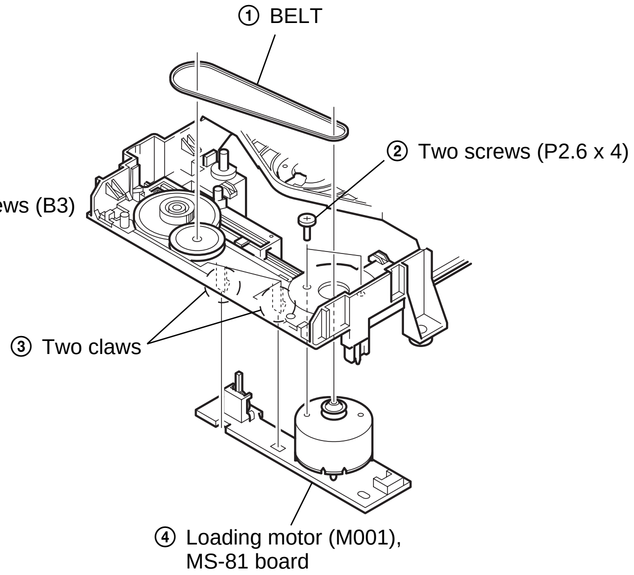
2-8. MECHANISM DECK REMOVAL



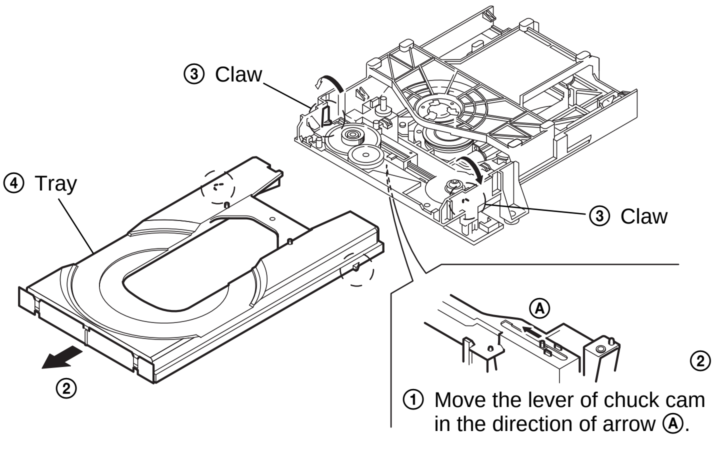
2-9. AI-23 BOARD REMOVAL



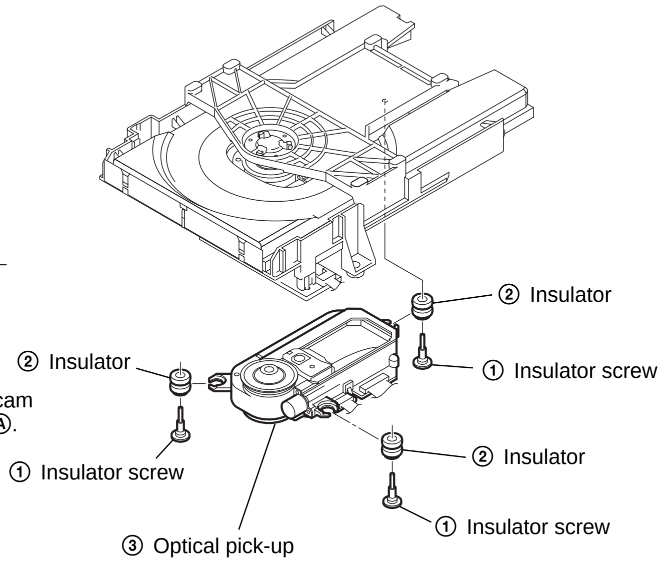
2-11. LOADING MOTOR (M001), MS-81 BOARD REMOVAL



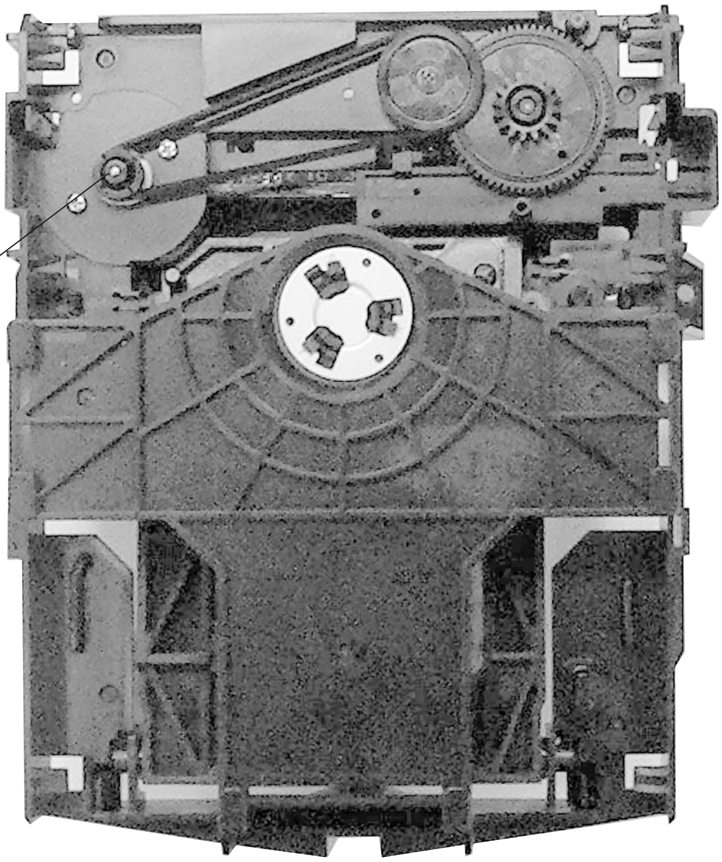
2-10. TRAY REMOVAL

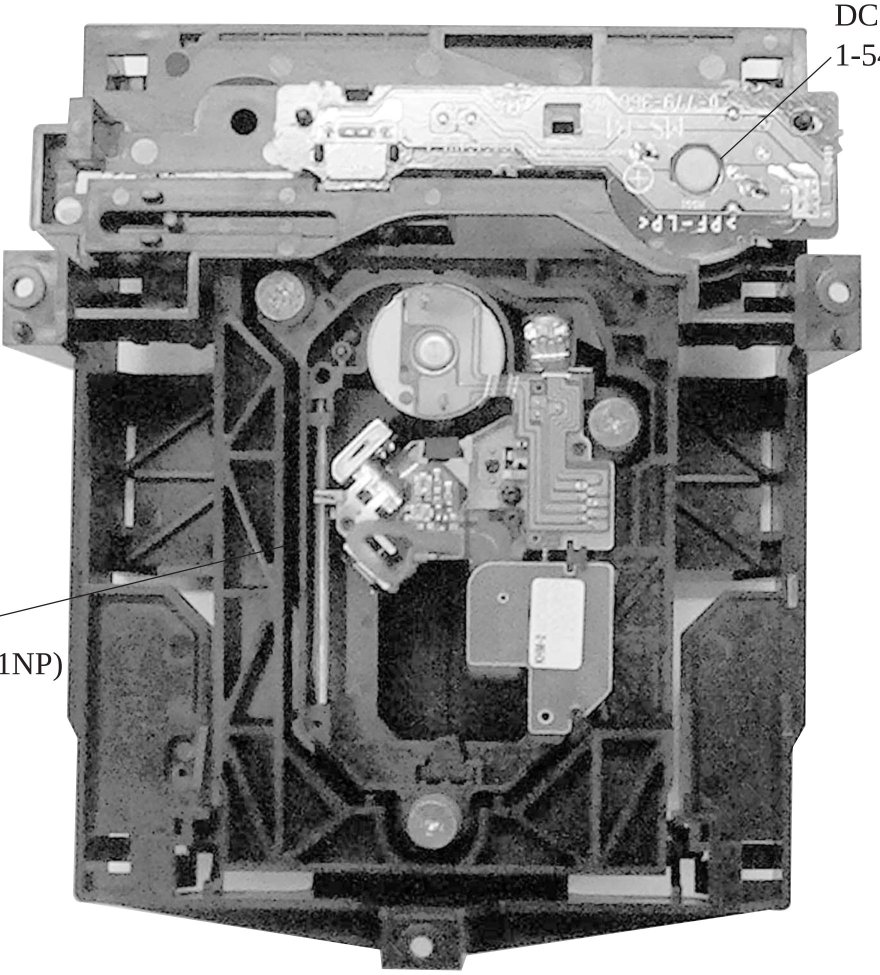


2-12. OPTICAL PICK-UP REMOVAL

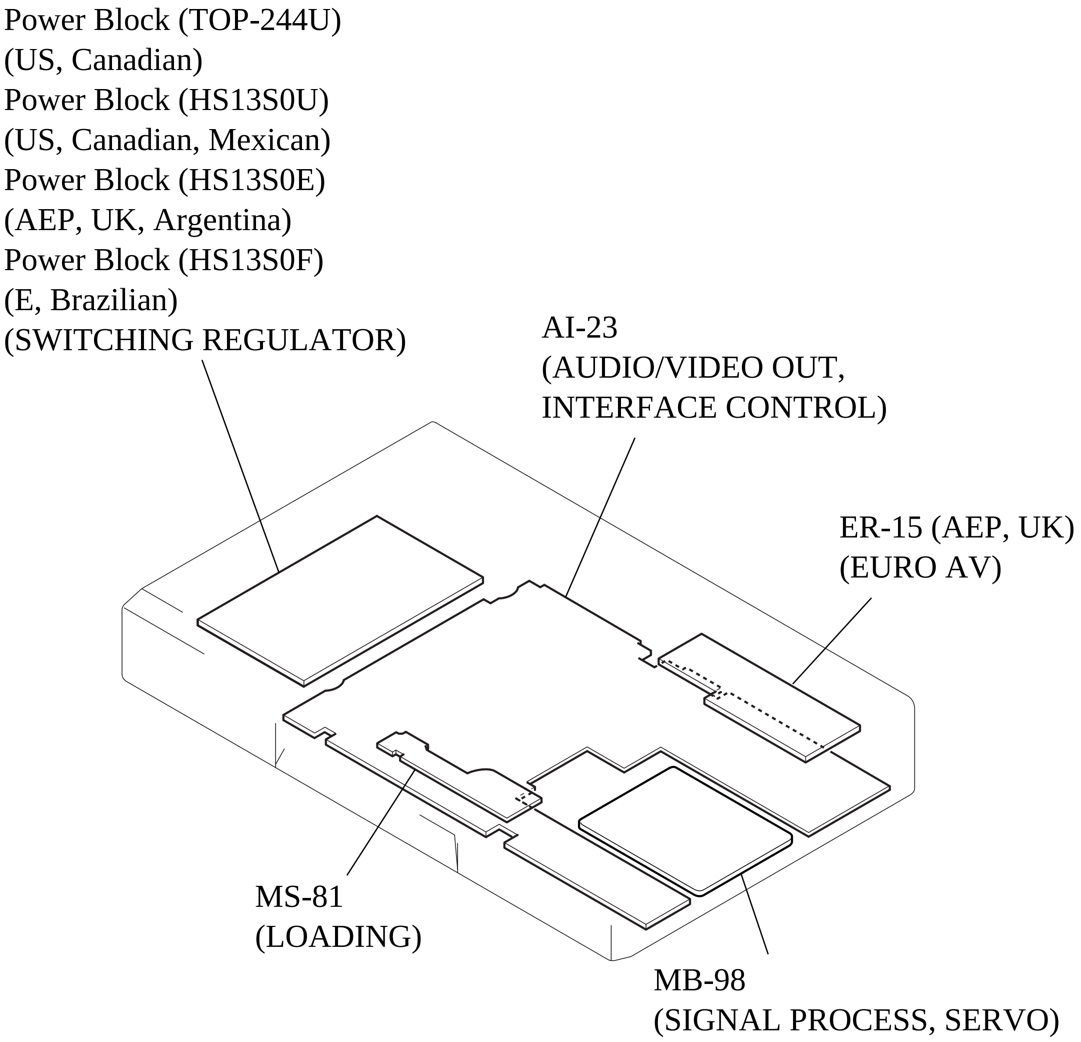


2-13. INTERNAL VIEWS



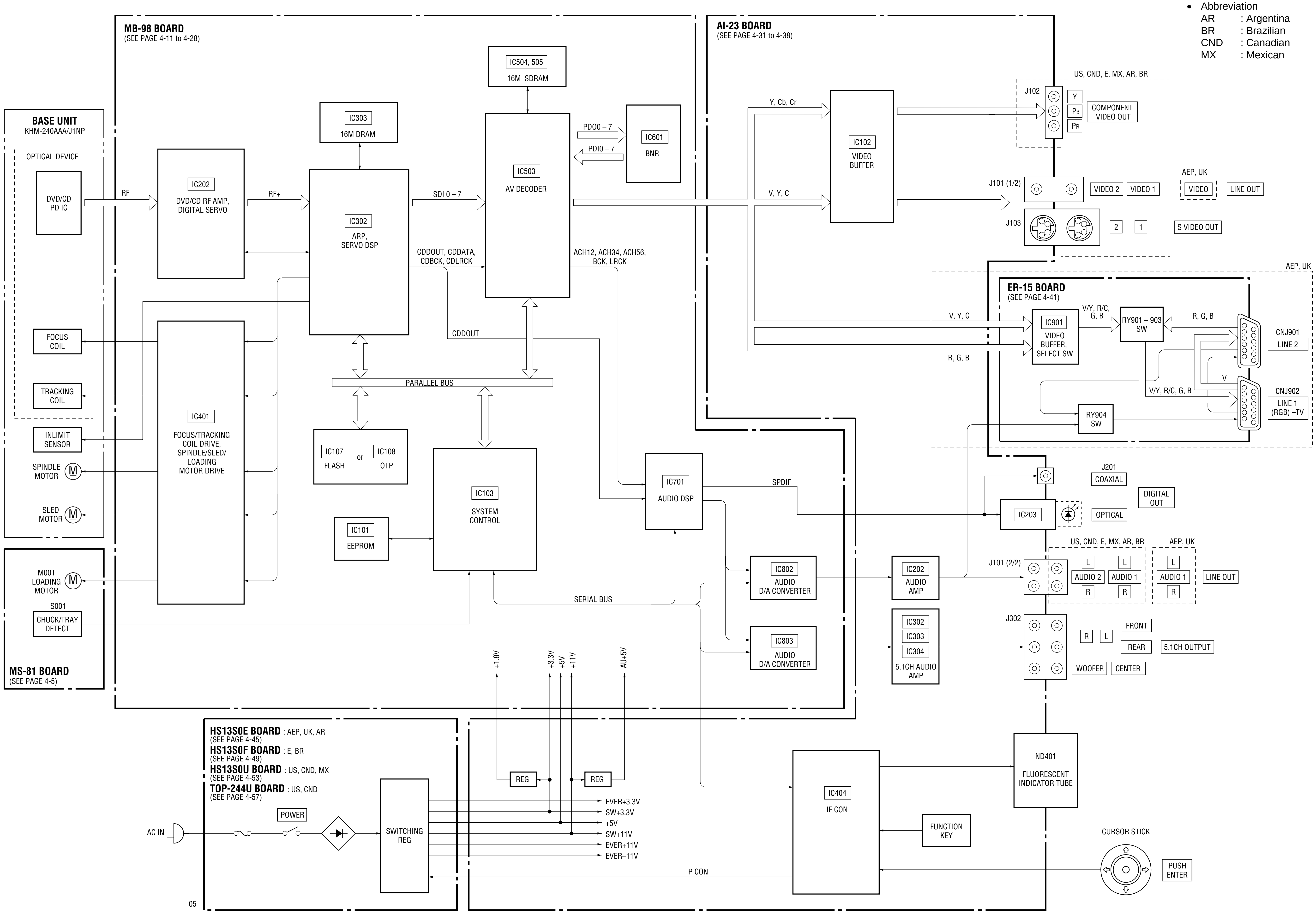


2-14. CIRCUIT BOARDS LOCATION

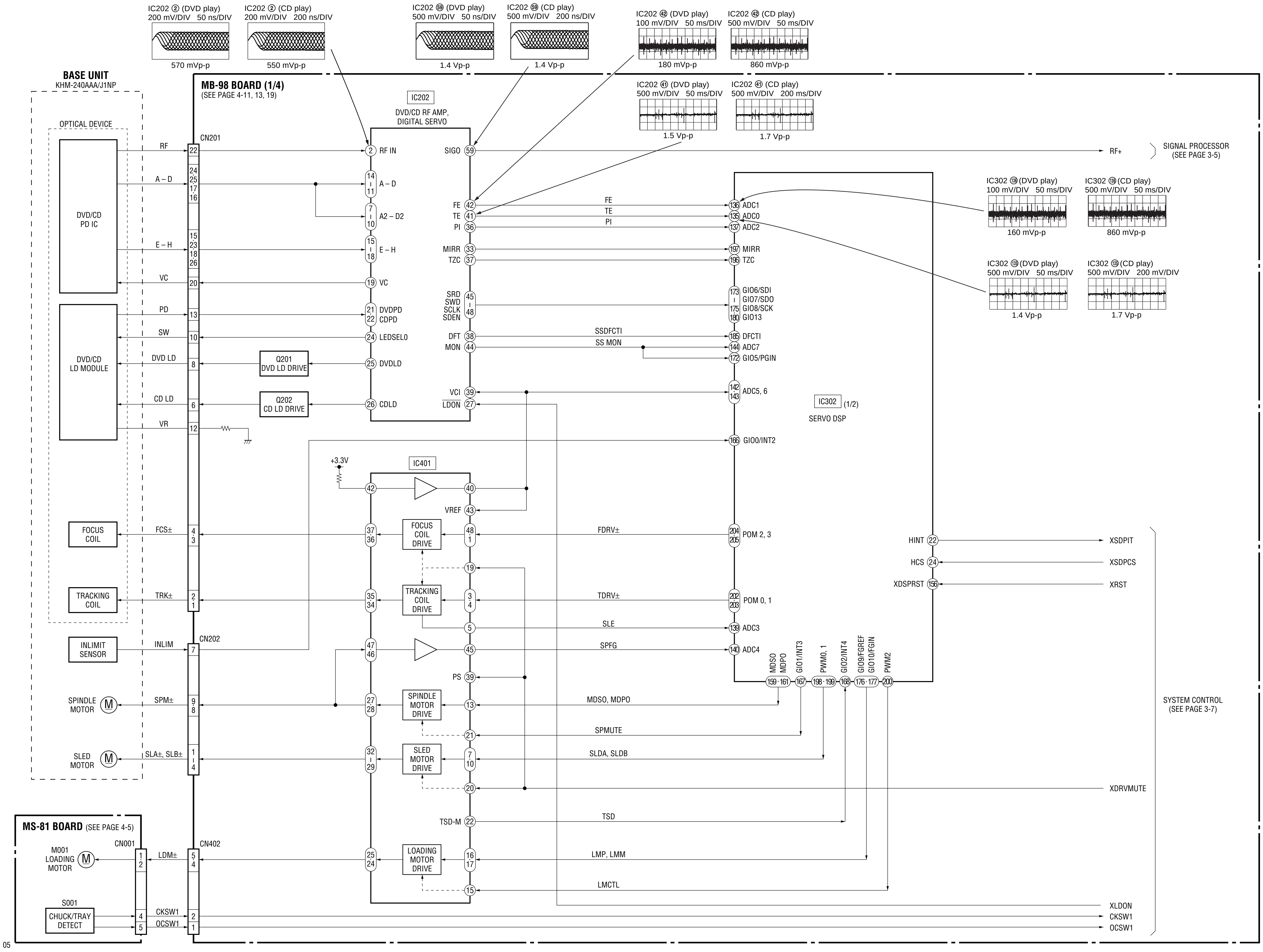


SECTION 3
BLOCK DIAGRAMS

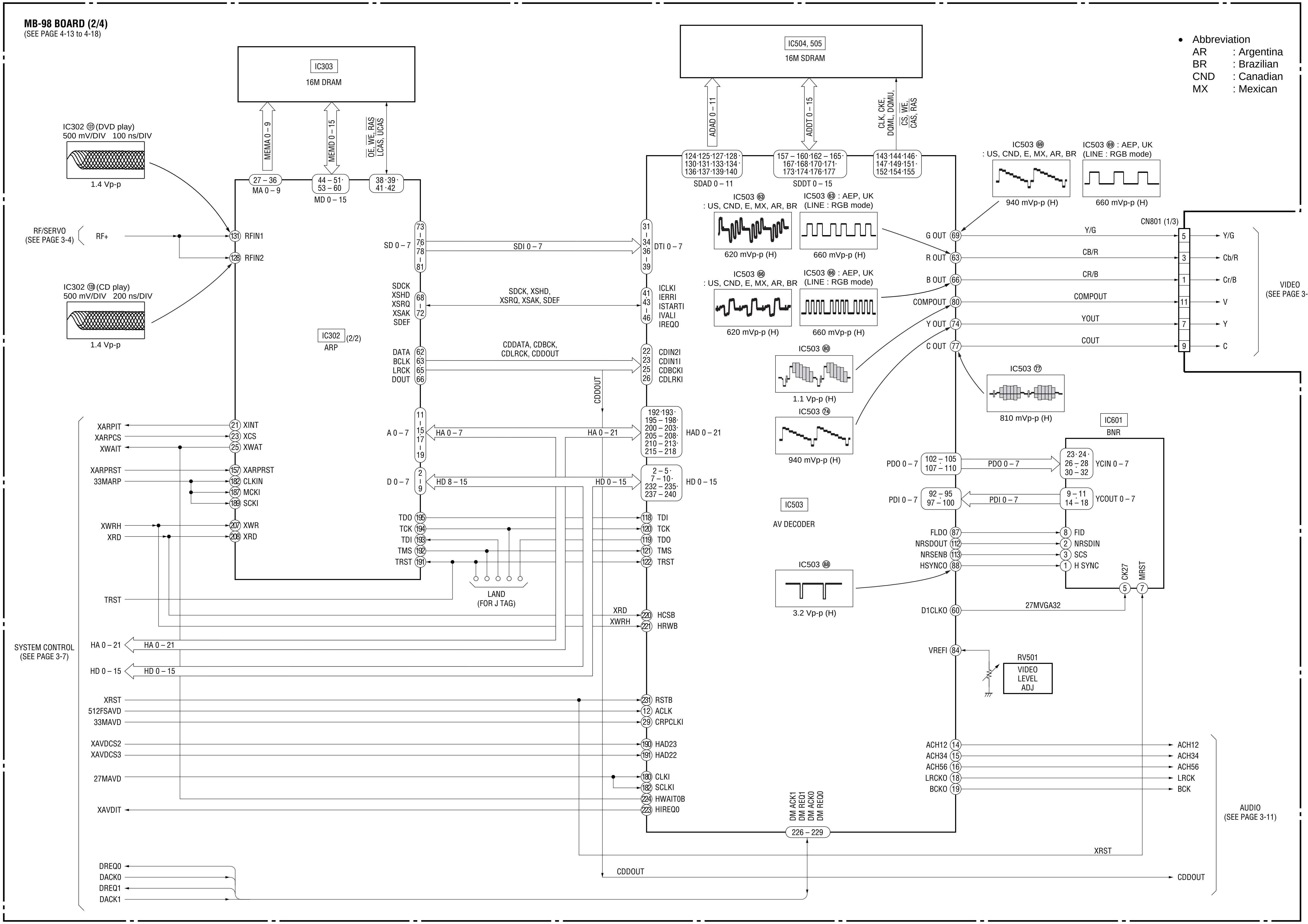
3-1. OVERALL BLOCK DIAGRAM



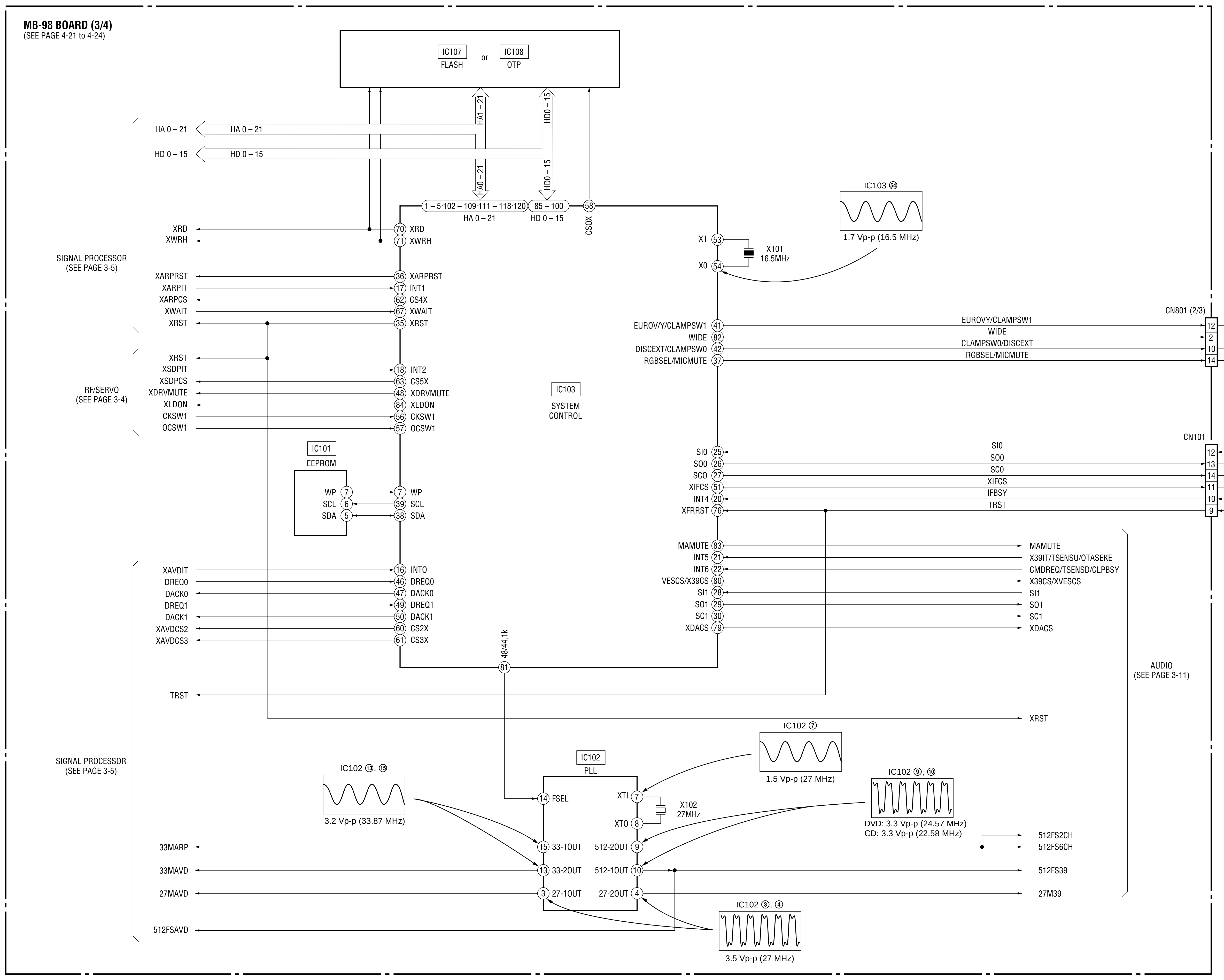
3-2. RF/SERVO BLOCK DIAGRAM



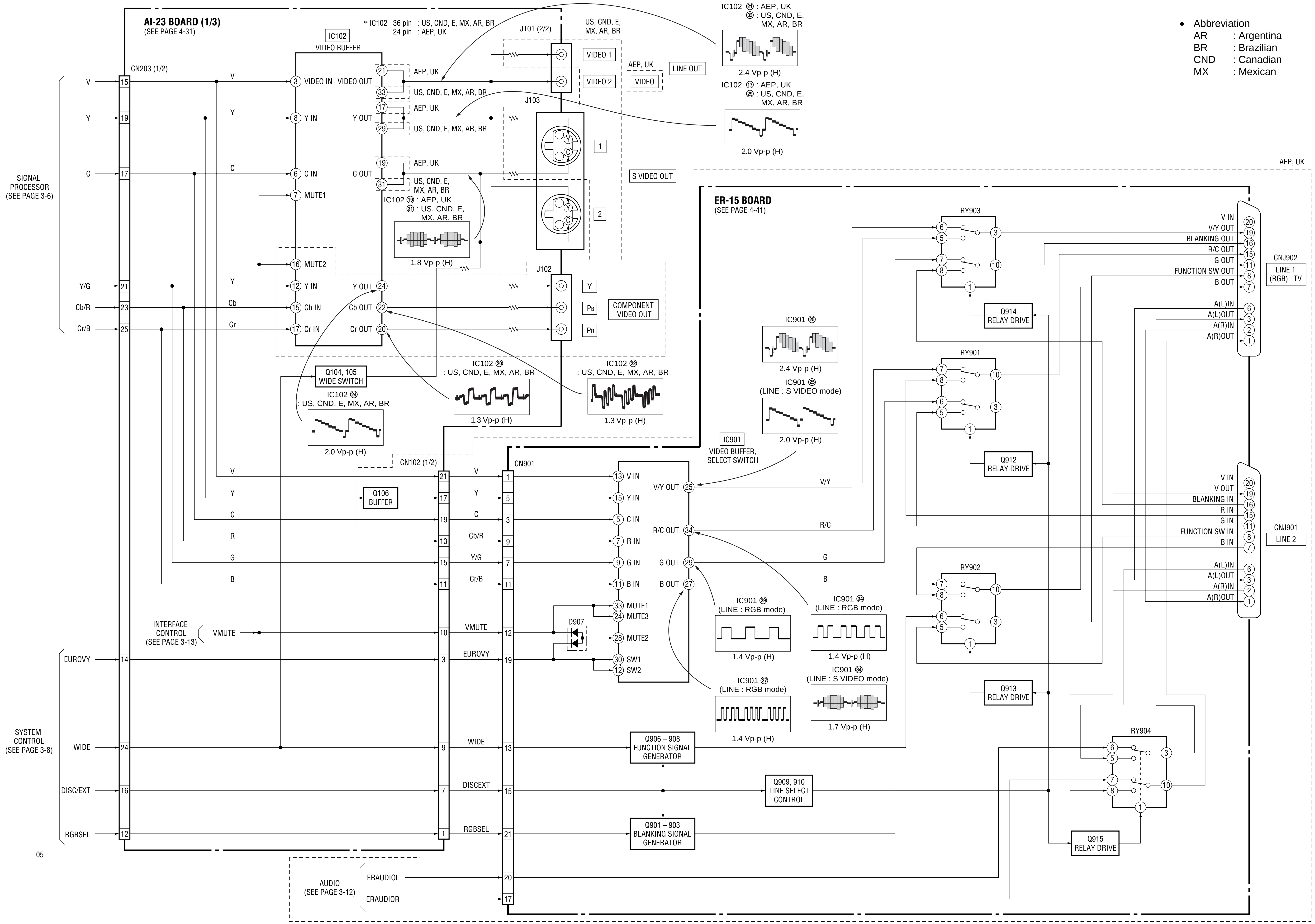
3-3. SIGNAL PROCESSOR BLOCK DIAGRAM



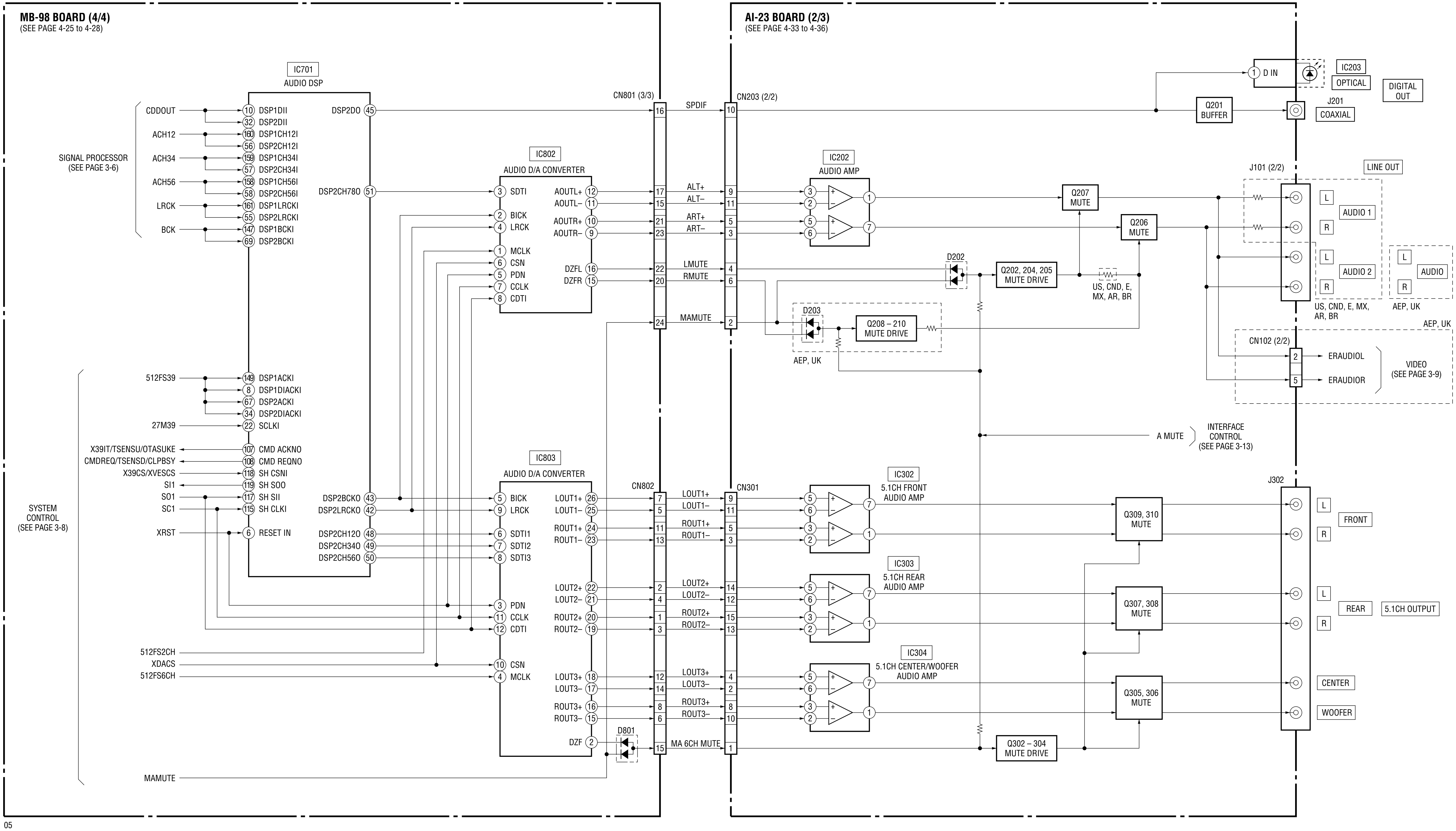
3-4. SYSTEM CONTROL BLOCK DIAGRAM



3-5. VIDEO BLOCK DIAGRAM

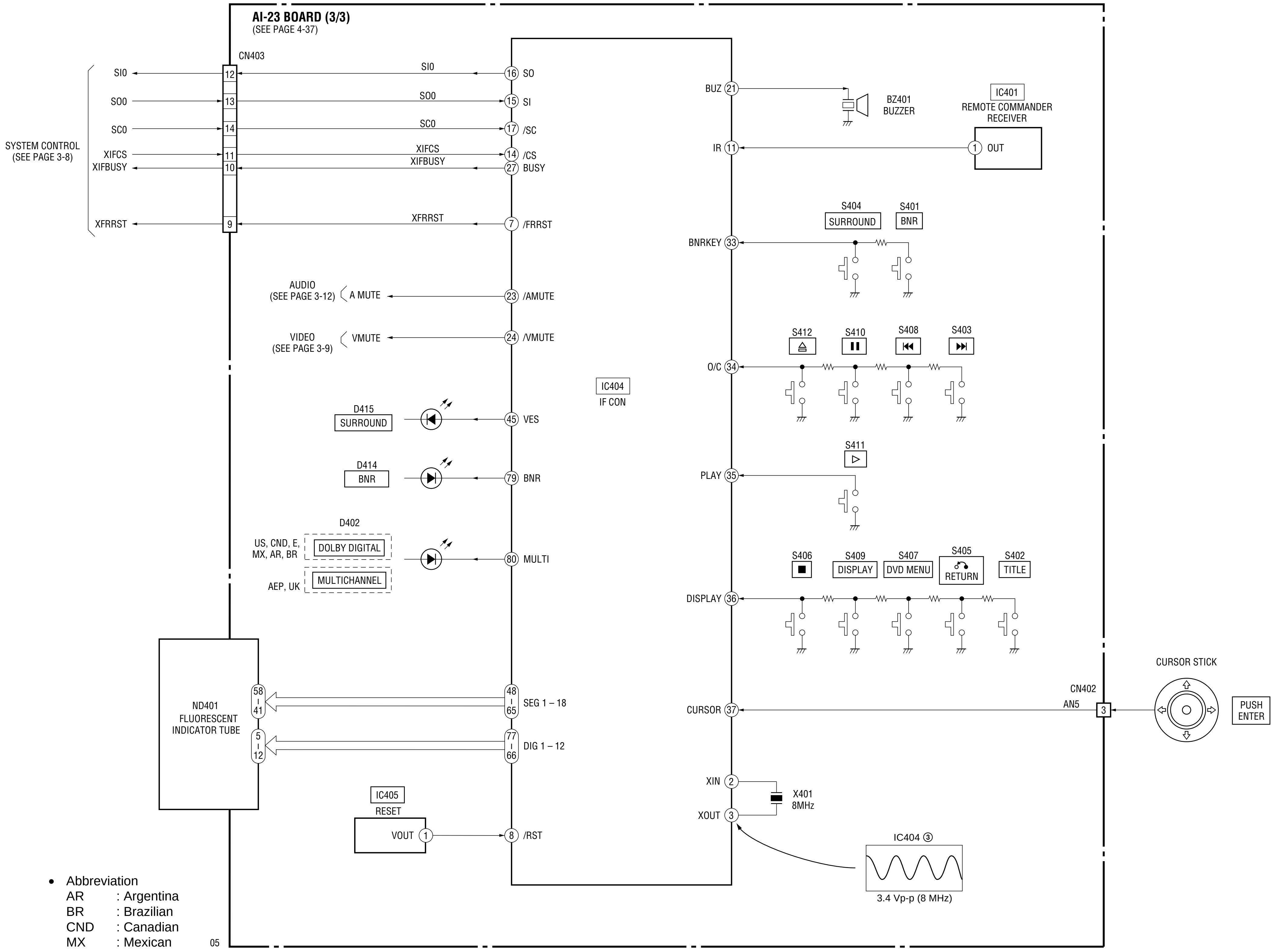


3-6. AUDIO BLOCK DIAGRAM



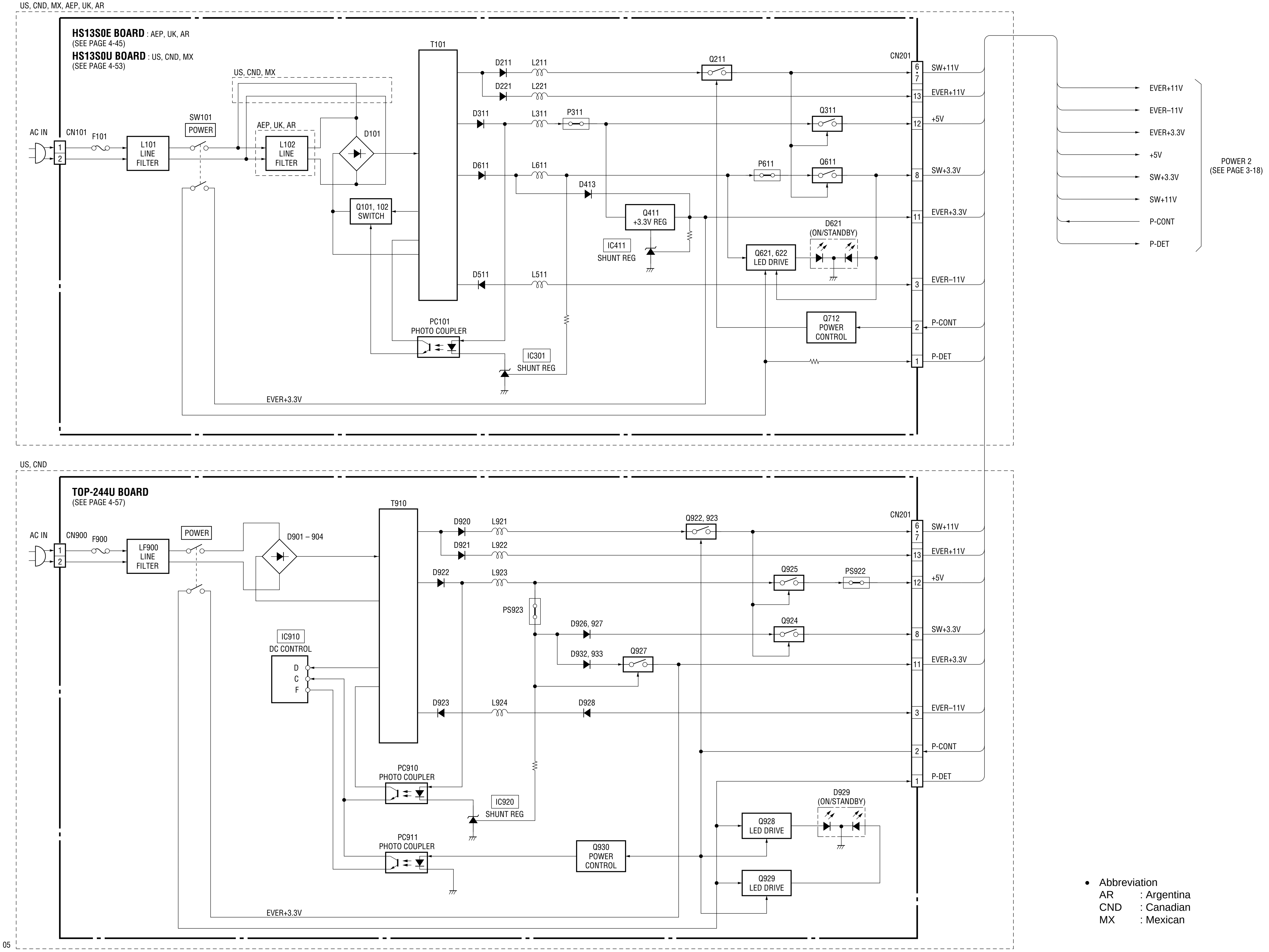
- Abbreviation
  - AR : Argentina
  - BR : Brazilian
  - CND : Canadian
  - MX : Mexican

3-7. INTERFACE CONTROL BLOCK DIAGRAM



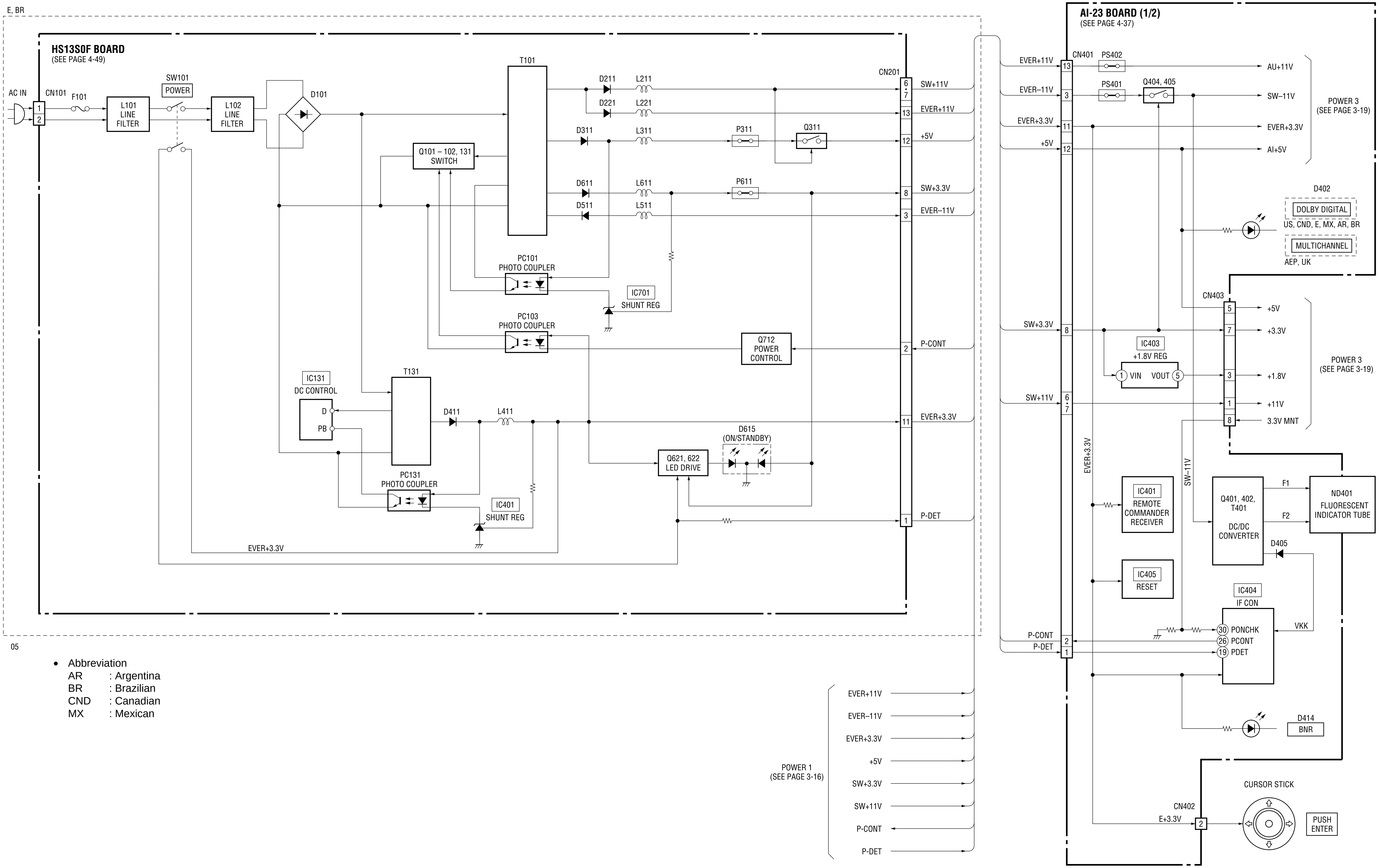
- Abbreviation
  AR : Argentina
  BR : Brazilian
  CND : Canadian
  MX : Mexican

3-8. POWER 1 BLOCK DIAGRAM



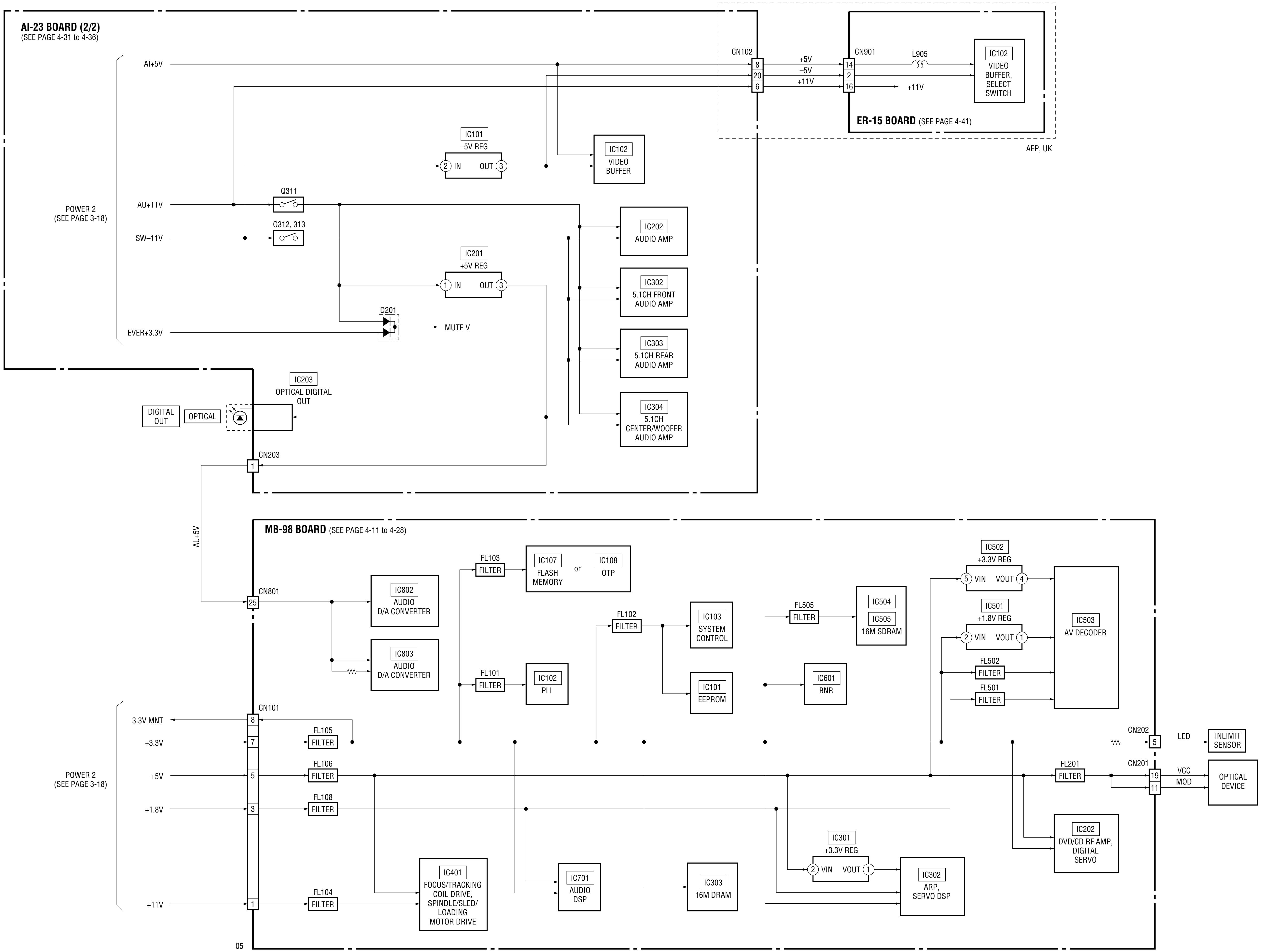
- Abbreviation
  AR : Argentina
  CND : Canadian
  MX : Mexican

3-9. POWER 2 BLOCK DIAGRAM



- Abbreviation
  - AR : Argentina
  - BR : Brazilian
  - CND : Canadian
  - MX : Mexican

3-10. POWER 3 BLOCK DIAGRAM



SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary mote is printed in each block.)

For printed wiring boards:

- : indicates a lead wire mounted on the component side.
- : indicates a lead wire mounted on the printed side.
- ○ : Through hole.
- : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated.)

Caution:	
Pattern face side: (Side A)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side B)	Parts on the parts face side seen from the parts face are indicated.

For schematic diagram:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, $^{1}/_{4}$ W (Chip resistors : $^{1}/_{10}$ W) unless otherwise specified.
  kΩ : 1000Ω, MΩ : 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.
- △ : internal component.
- : adjustment for repair.
- B+ : B+ Line.
- B– : B– Line.
- Circled numbers refer to waveforms.
- Voltages are dc between measurement point.
- Readings are taken with a color-bar signal on DVD reference disc and when playing CD reference disc.
- Readings are taken with a digital multimeter (DC 10MΩ).
- Voltage variations may be noted due to normal production tolerances.

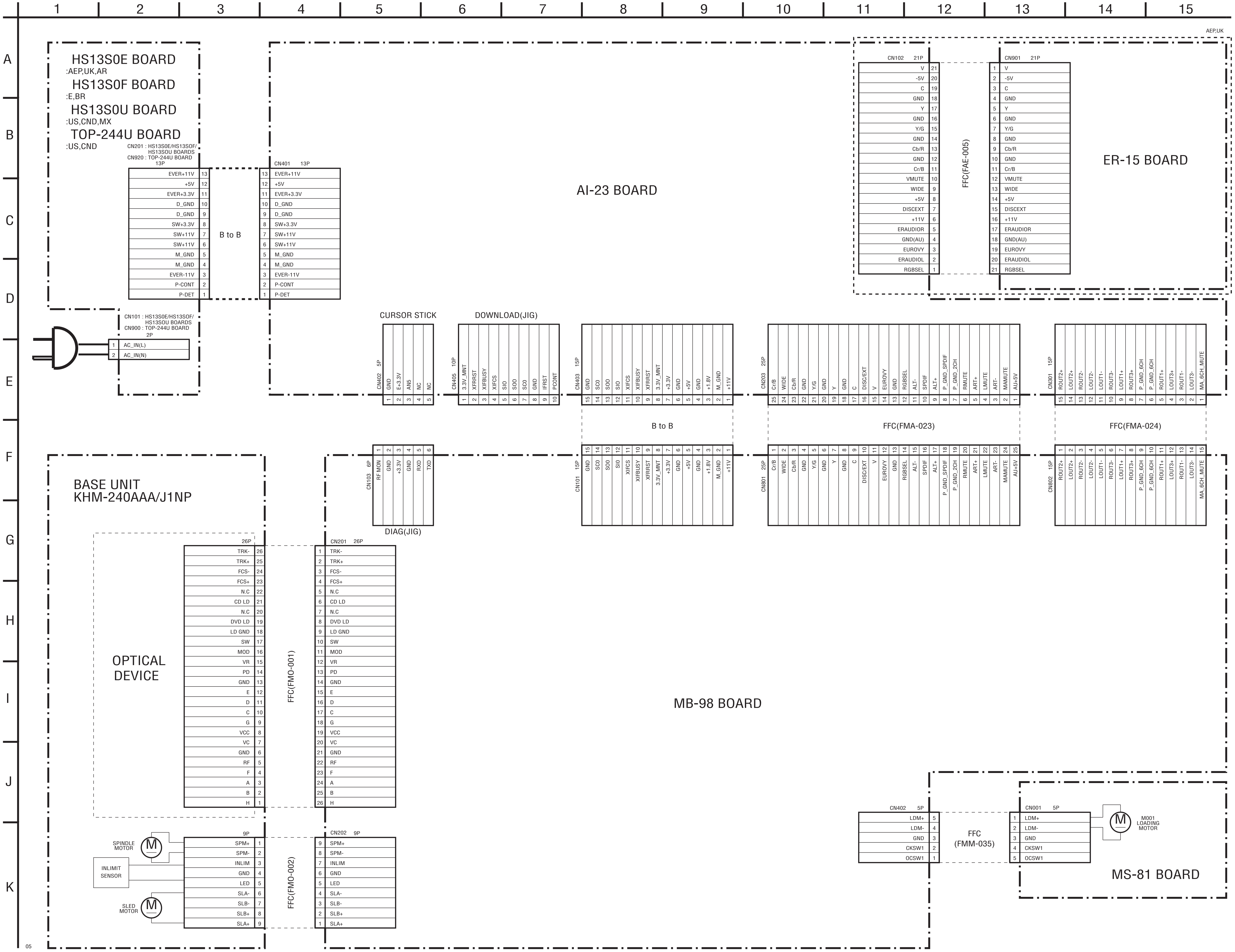
Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Abbreviation
  AR : Argentina
  BR : Brazilian
  CND : Canadian
  MX : Mexican

- Description about model name
  DPX14xxBJ
  - J — Name of production country
    J : Japan
    M : Malaysia
  - B — Color of set
    B : Black
    H : Titanium gray

4-1. FRAME SCHEMATIC DIAGRAM

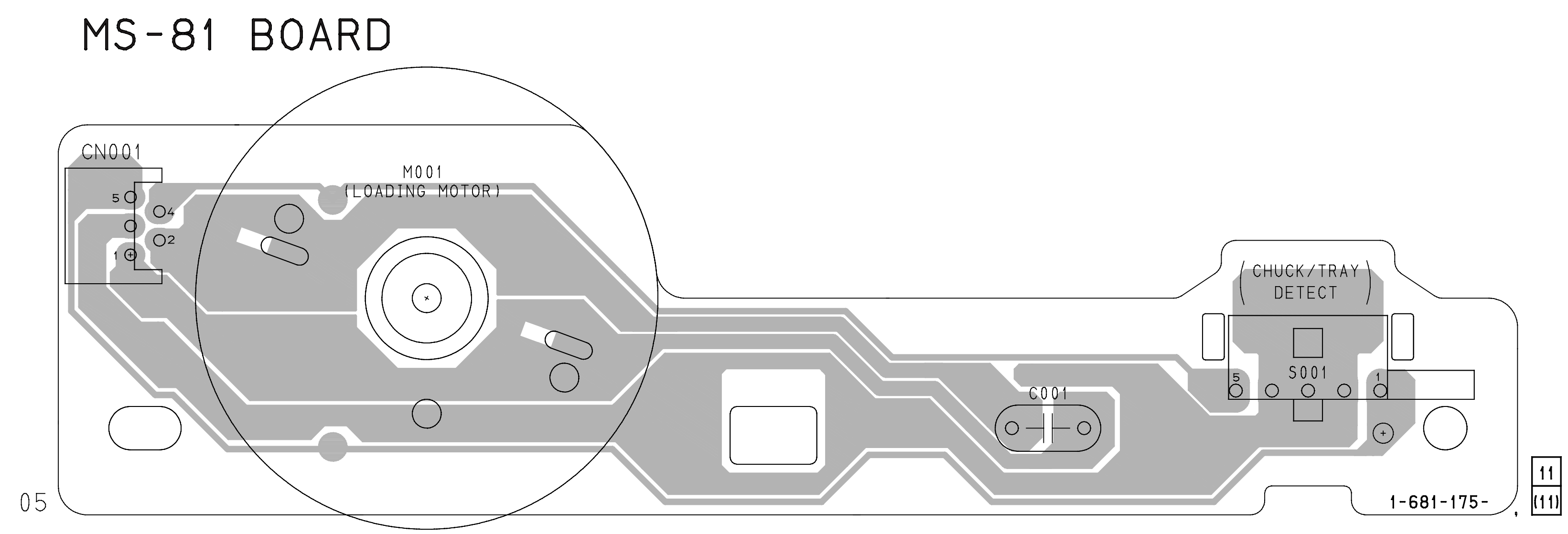


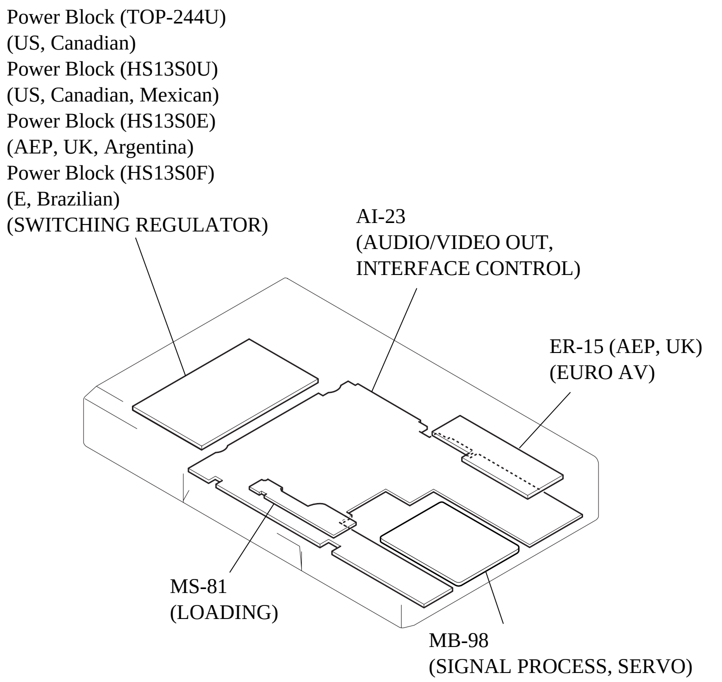
4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

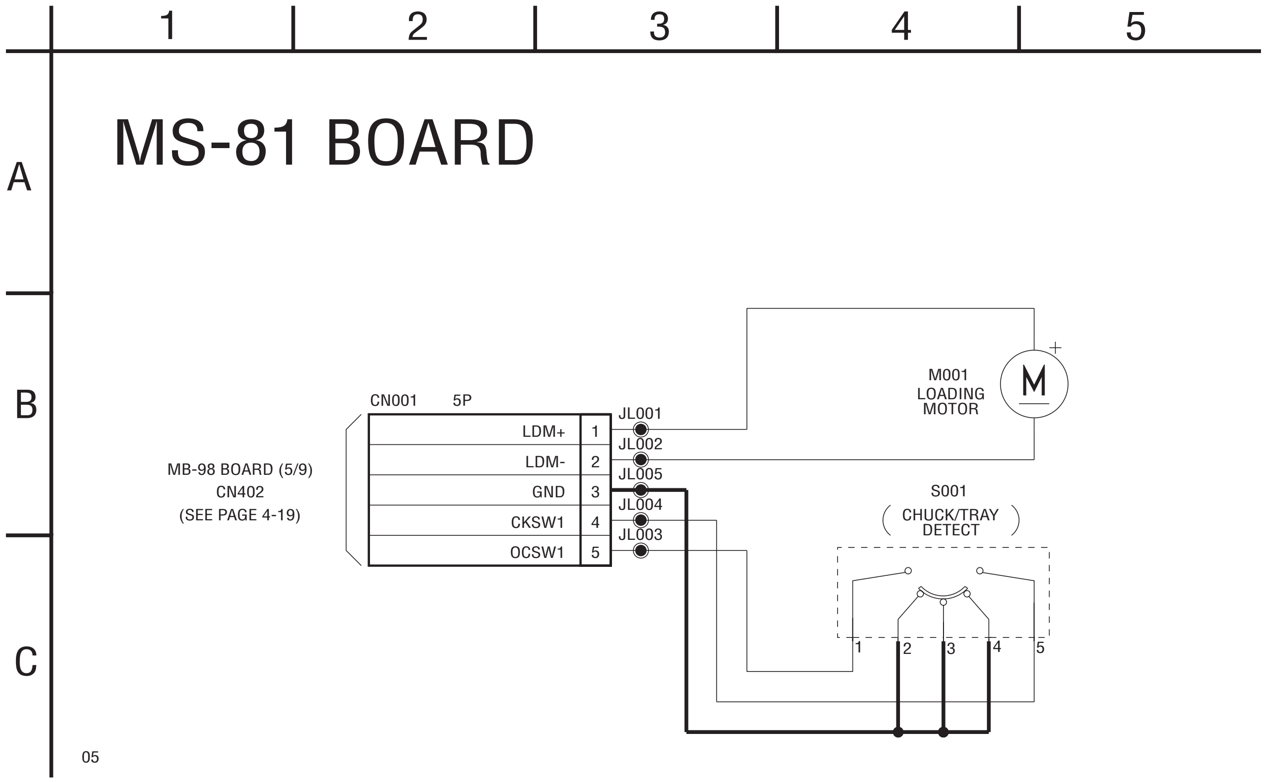
MS-81 (LOADING) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

– Ref. No.: MS-81 board; 1,000 series –

There are a few cases that the part isn't mounted in this model is printed on this diagram.







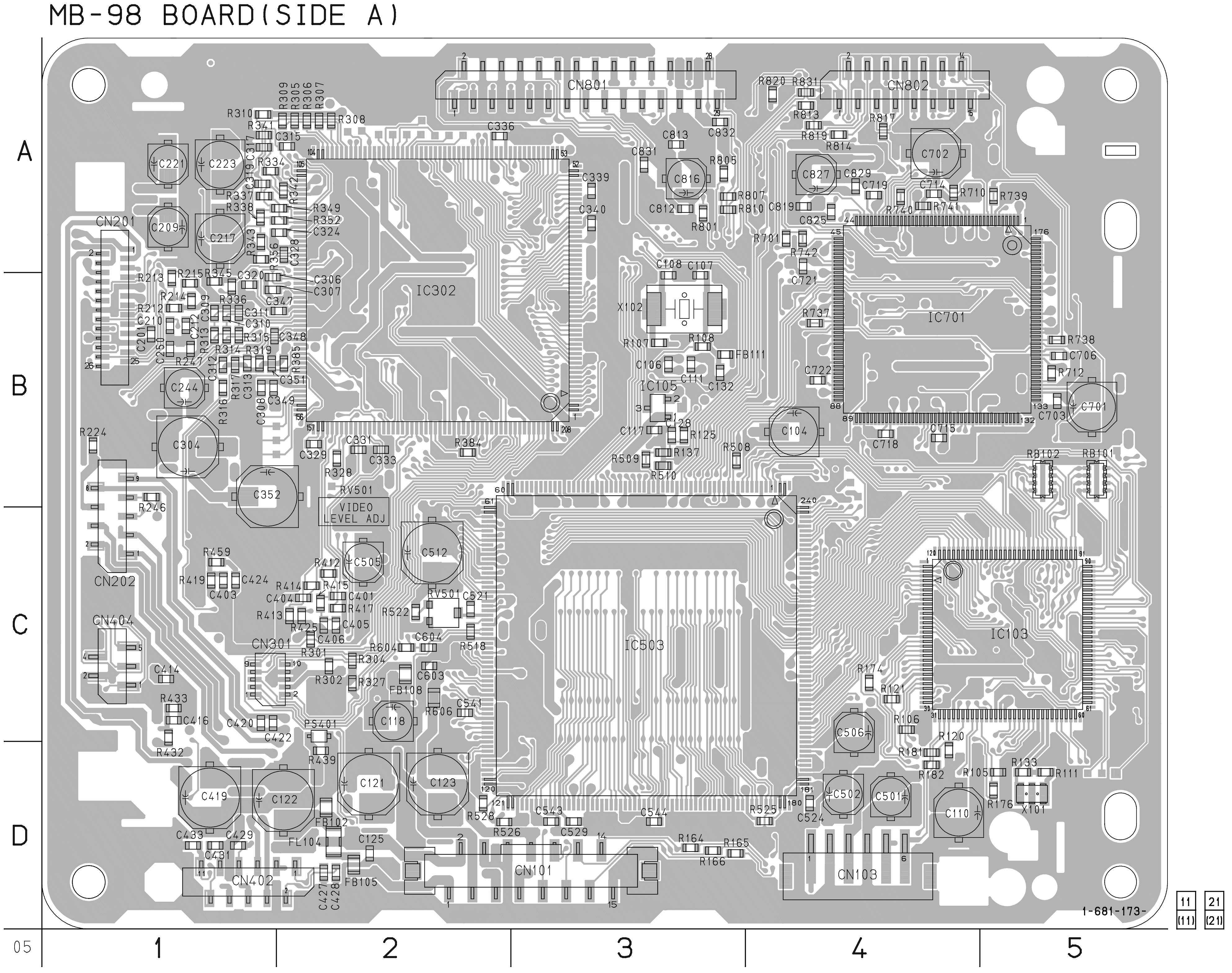
There are a few cases that the part isn't mounted in this model is printed on this diagram.

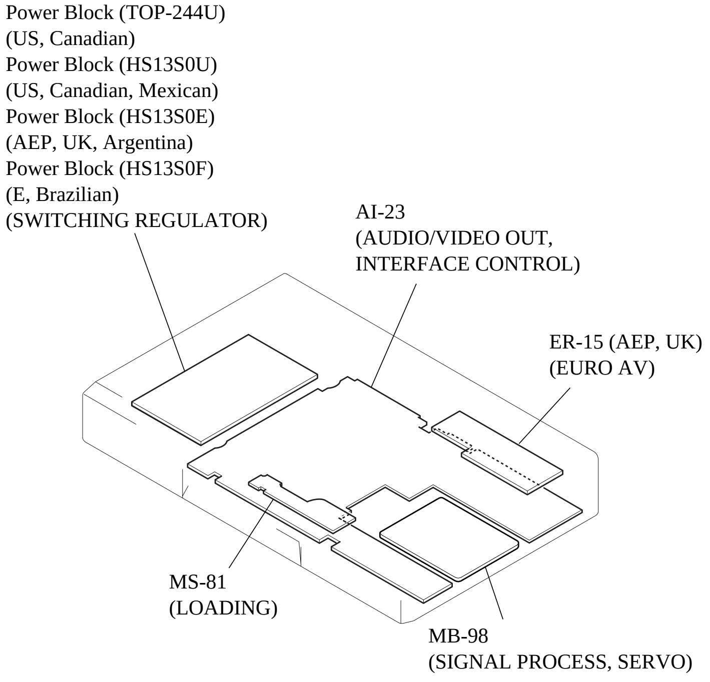
MB-98 (SIGNAL PROCESS, SERVO) PRINTED WIRING BOARD

– Ref. No.: MB-98 board; 2,000 series –

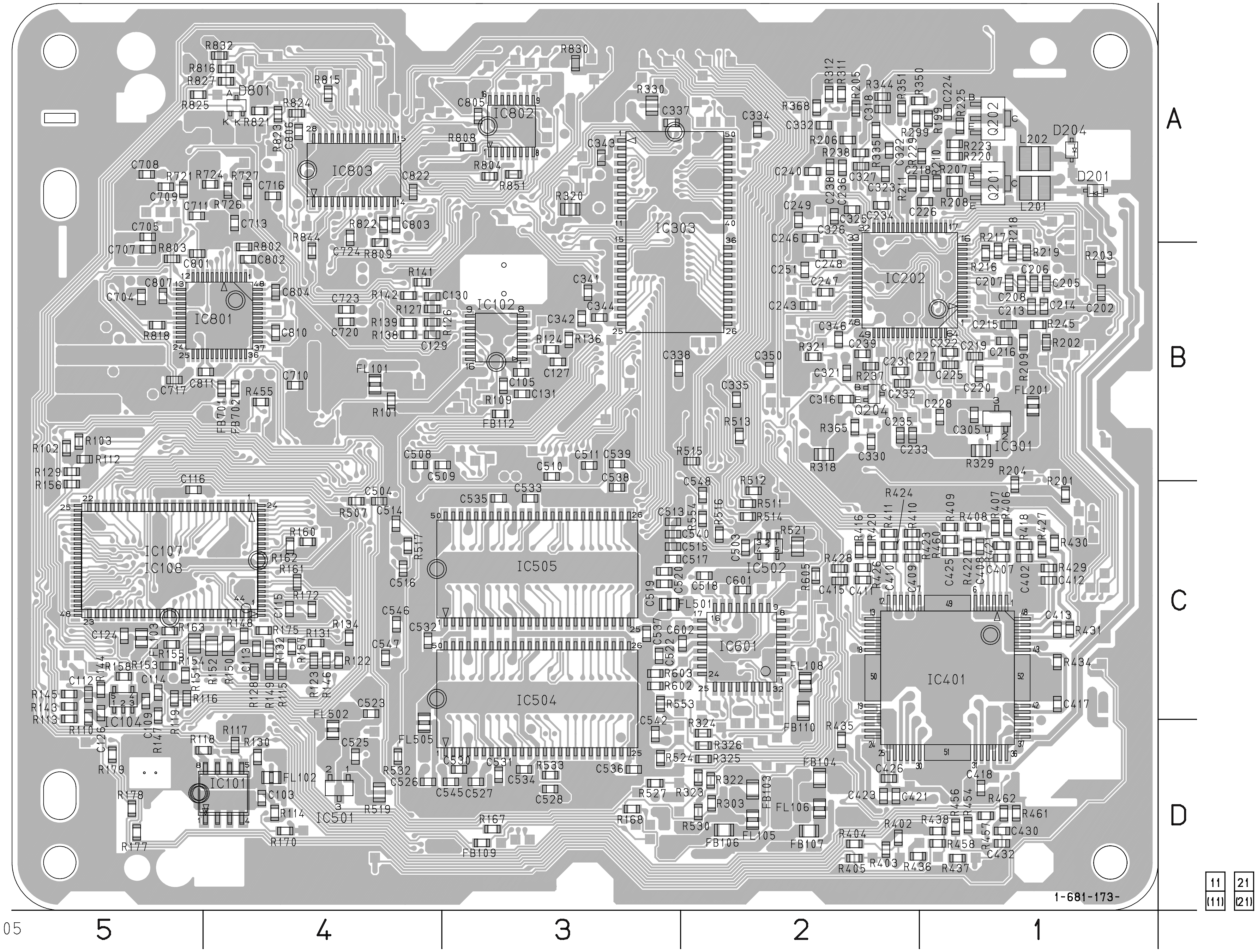
MB-98 BOARD (SIDE A)

CN101	D-3
CN103	D-4
CN201	A-1
CN202	C-1
CN402	D-1
CN801	A-3
CN802	A-4
IC103	C-5
IC302	B-2
IC503	C-3
IC701	B-4





MB-98 BOARD(SIDE B)

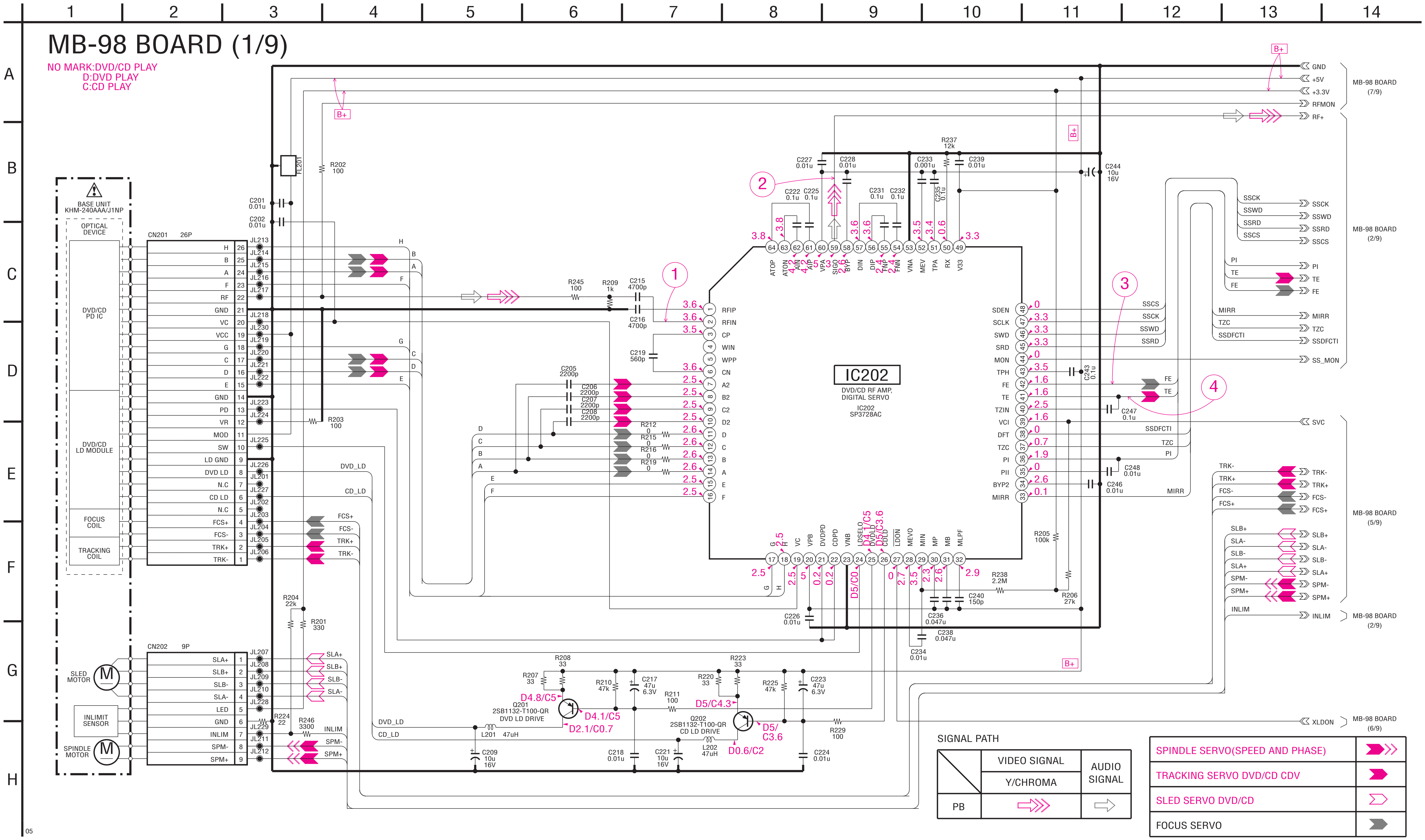


MB-98 BOARD (SIDE B)

D801	A-4
IC101	D-4
IC102	B-3
IC107	C-5
IC202	B-2
IC301	B-1
IC303	A-3
IC401	C-1
IC501	D-4
IC502	C-2
IC504	C-3
IC505	C-3
IC601	C-2
IC802	A-3
IC803	A-4
Q201	A-1
Q202	A-1

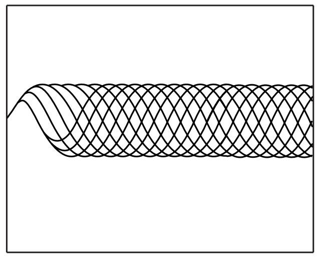
MB-98 (RF AMP, SERVO) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.
– Ref. No.: MB-98 board; 2,000 series –

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



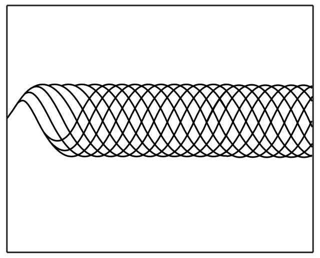
• **Waveforms**

❶ IC202 ② (DVD play)
200 mV/DIV 50 ns/DIV



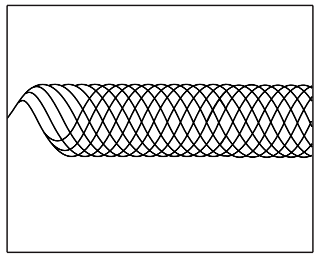
570 mVp-p

❶ IC202 ② (CD play)
200 mV/DIV 200 ns/DIV



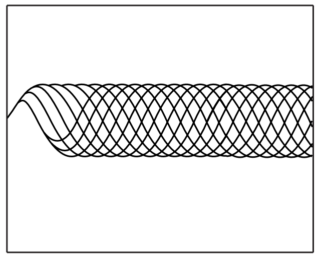
550 mVp-p

❷ IC202 ⑲ (DVD play)
500 mV/DIV 50 ns/DIV



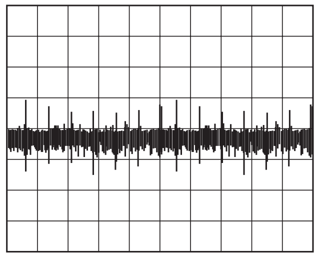
1.4 Vp-p

❷ IC202 ⑲ (CD play)
500 mV/DIV 200 ns/DIV



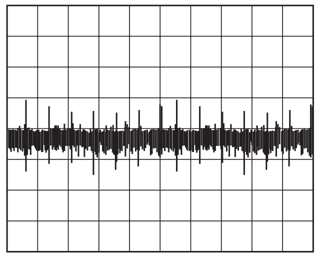
1.4 Vp-p

❸ IC202 ㊷ (DVD play)
100 mV/DIV 50 ms/DIV



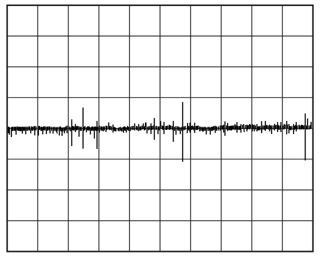
180 mVp-p

❸ IC202 ㊷ (CD play)
500 mV/DIV 50 ms/DIV



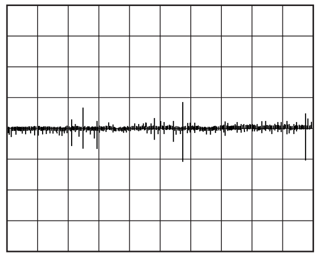
860 mVp-p

❹ IC202 ㊶ (DVD play)
500 mV/DIV 50 ms/DIV



1.5 Vp-p

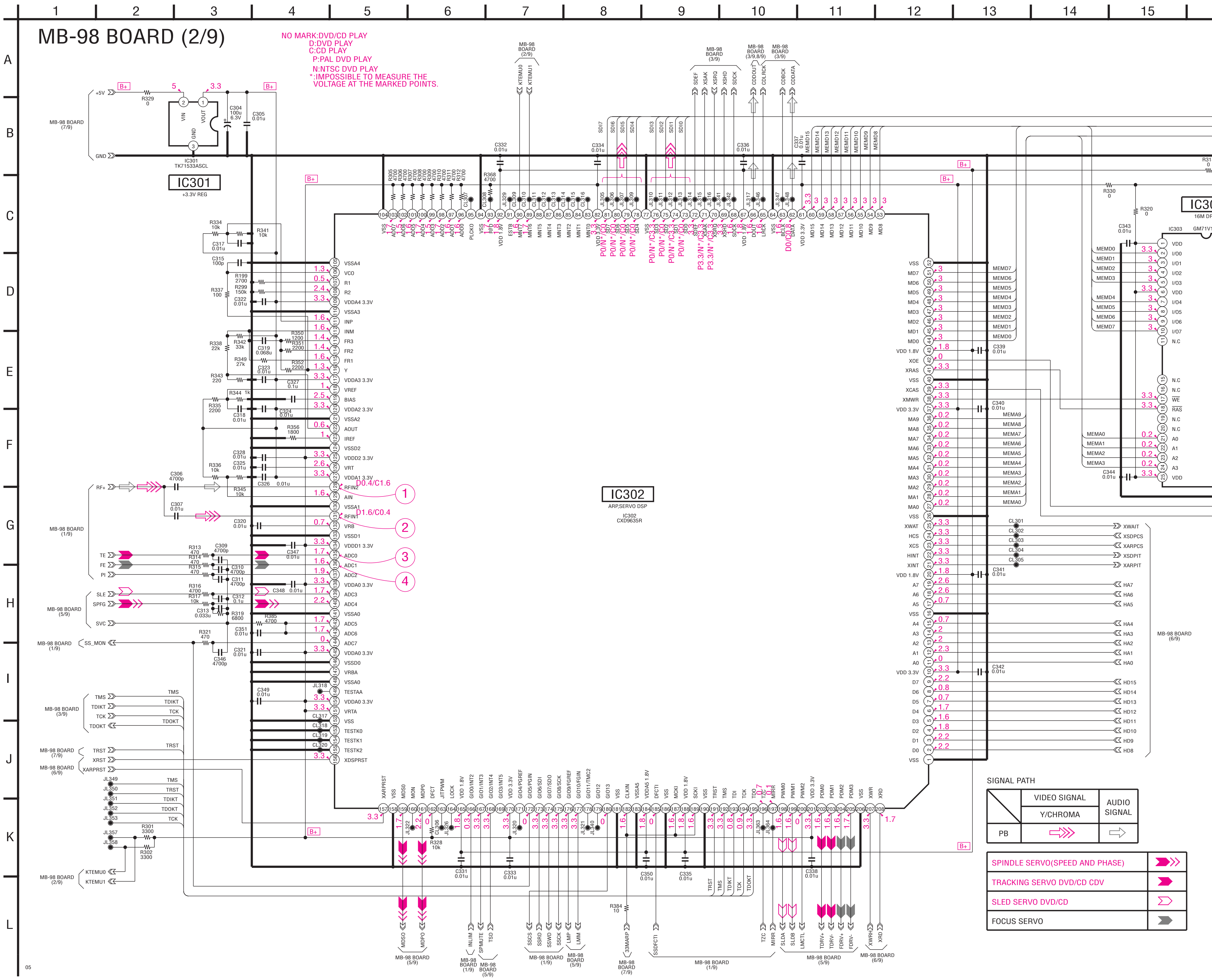
❹ IC202 ㊶ (CD play)
500 mV/DIV 200 ns/DIV

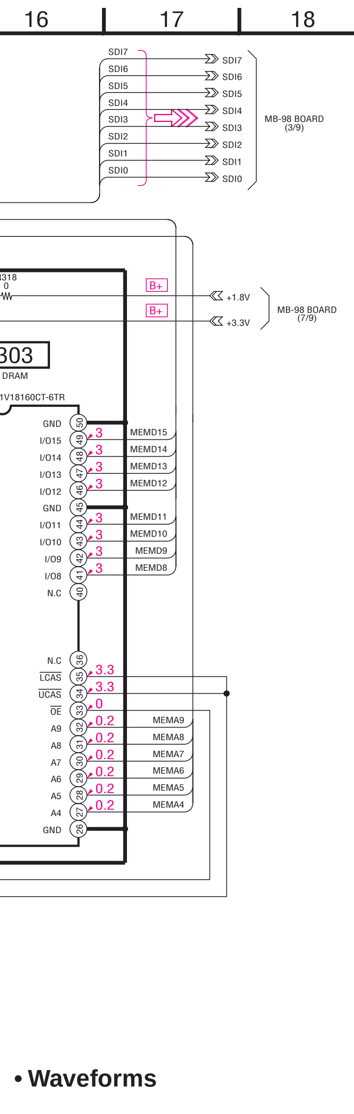


1.7 Vp-p

MB-98 (ARP, SERVO DSP) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

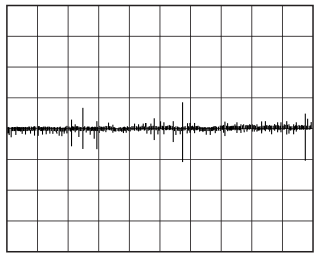
– Ref. No.: MB-98 board; 2,000 series –





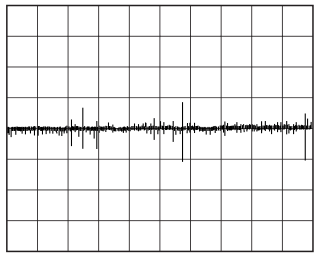
• **Waveforms**

➌ IC302 ⑬ (DVD play)
500 mV/DIV 50 ms/DIV



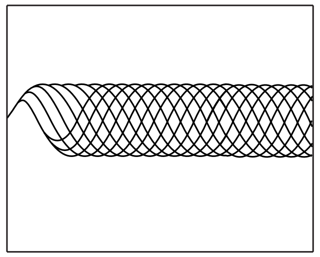
1.4 Vp-p

➌ IC302 ⑬ (CD play)
500 mV/DIV 200 ms/DIV



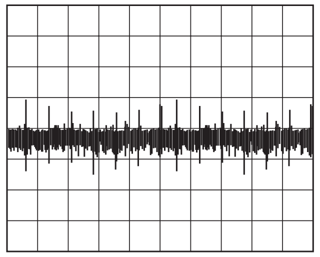
1.7 Vp-p

➊ IC302 ⑫ (CD play)
500 mV/DIV 200 ns/DIV



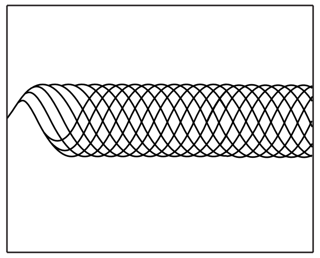
1.4 Vp-p

➍ IC302 ⑬ (DVD play)
100 mV/DIV 50 ms/DIV



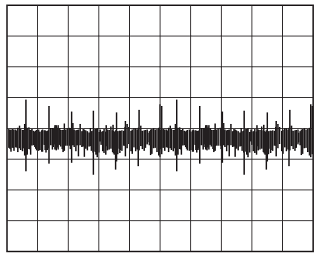
160 mVp-p

➋ IC302 ⑬ (DVD play)
500 mV/DIV 100 ns/DIV



1.4 Vp-p

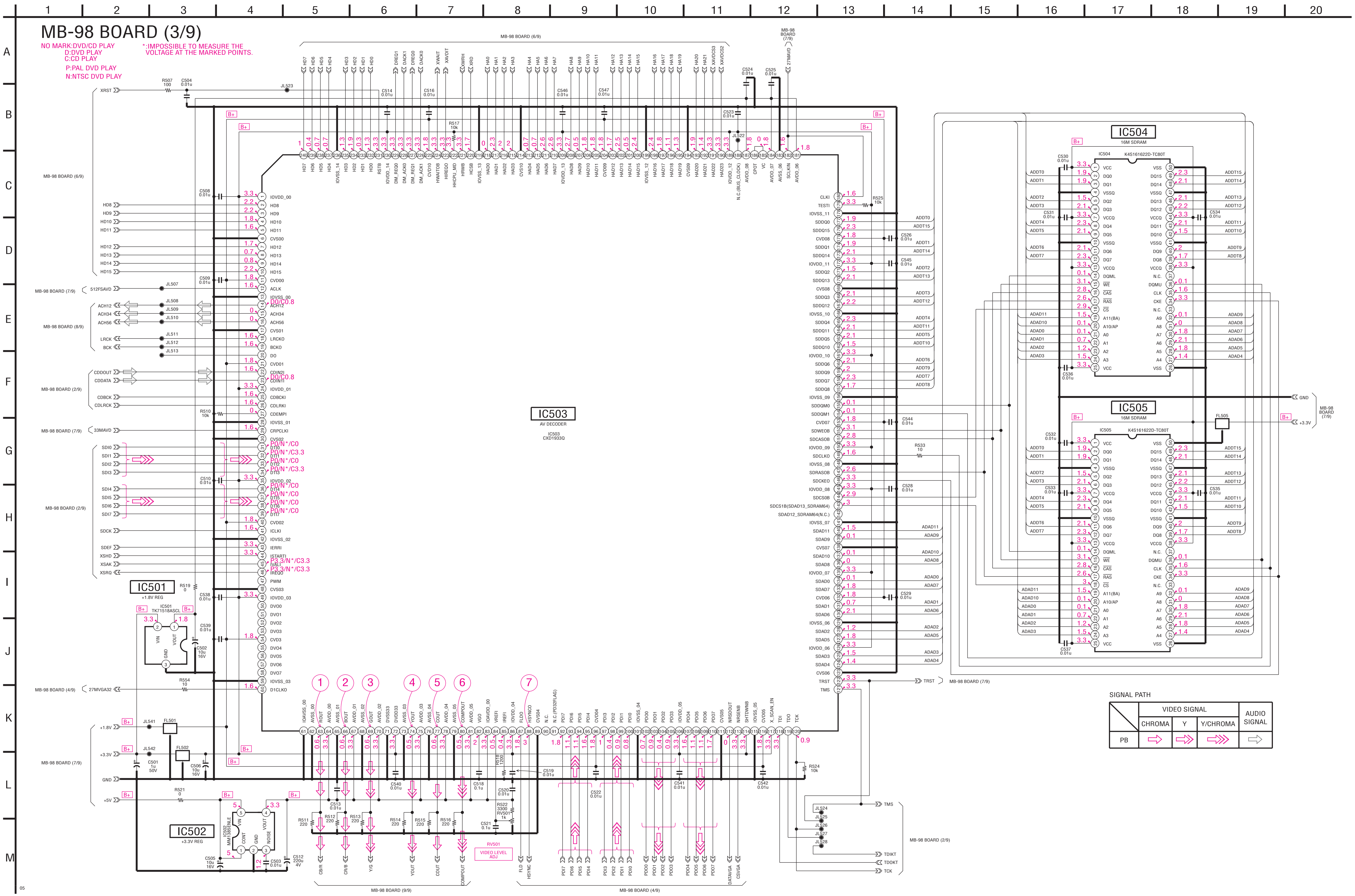
➍ IC302 ⑬ (CD play)
500 mV/DIV 50 ms/DIV



860 mVp-p

MB-98 (AV DECODER) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

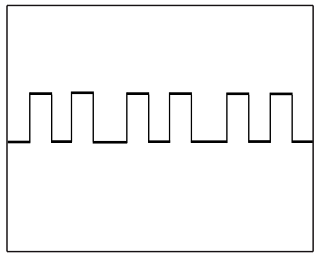
– Ref. No.: MB-98 board; 2,000 series –



MB-98 (BNR) SCHEMATIC DIAGRAM • **See page 4-7 for printed wiring board.**
– Ref. No.: MB-98 board; 2,000 series –

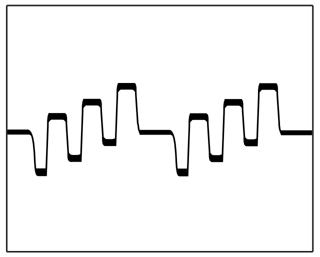
• **Waveforms**

❶ IC503 ⑬ : AEP, UK
(LINE : RGB mode)



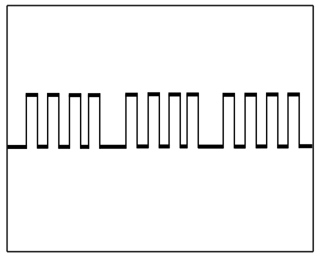
660 mVp-p (H)

❶ IC503 ⑬ : US, CND, E, MX, AR, BR



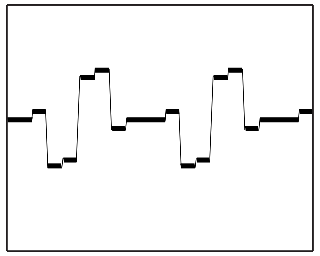
620 mVp-p (H)

❷ IC503 ⑯ : AEP, UK
(LINE : RGB mode)



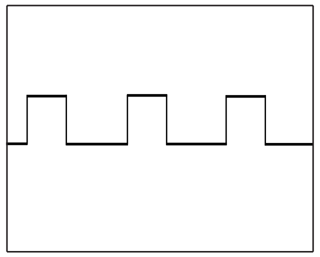
660 mVp-p (H)

❷ IC503 ⑯ : US, CND, E, MX, AR, BR



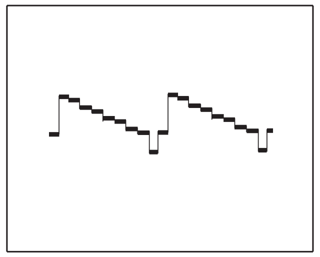
620 mVp-p (H)

❸ IC503 ⑲ : AEP, UK
(LINE : RGB mode)



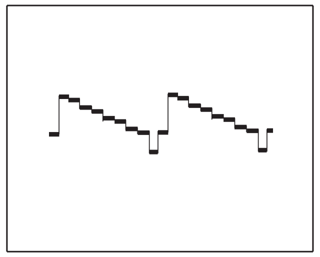
660 mVp-p (H)

❸ IC503 ⑲ : US, CND, E, MX, AR, BR



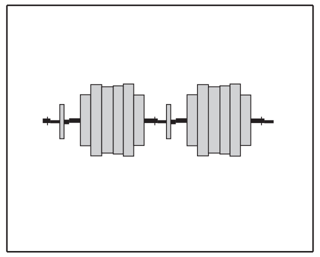
940 mVp-p (H)

❹ IC503 ⑭



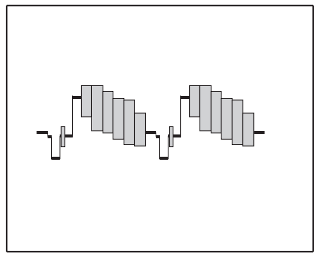
940 mVp-p (H)

❺ IC503 ⑰



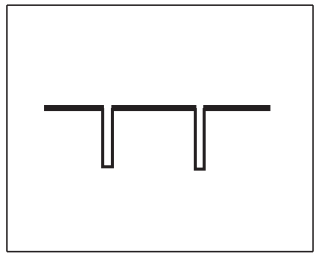
810 mVp-p (H)

❻ IC503 ⑳

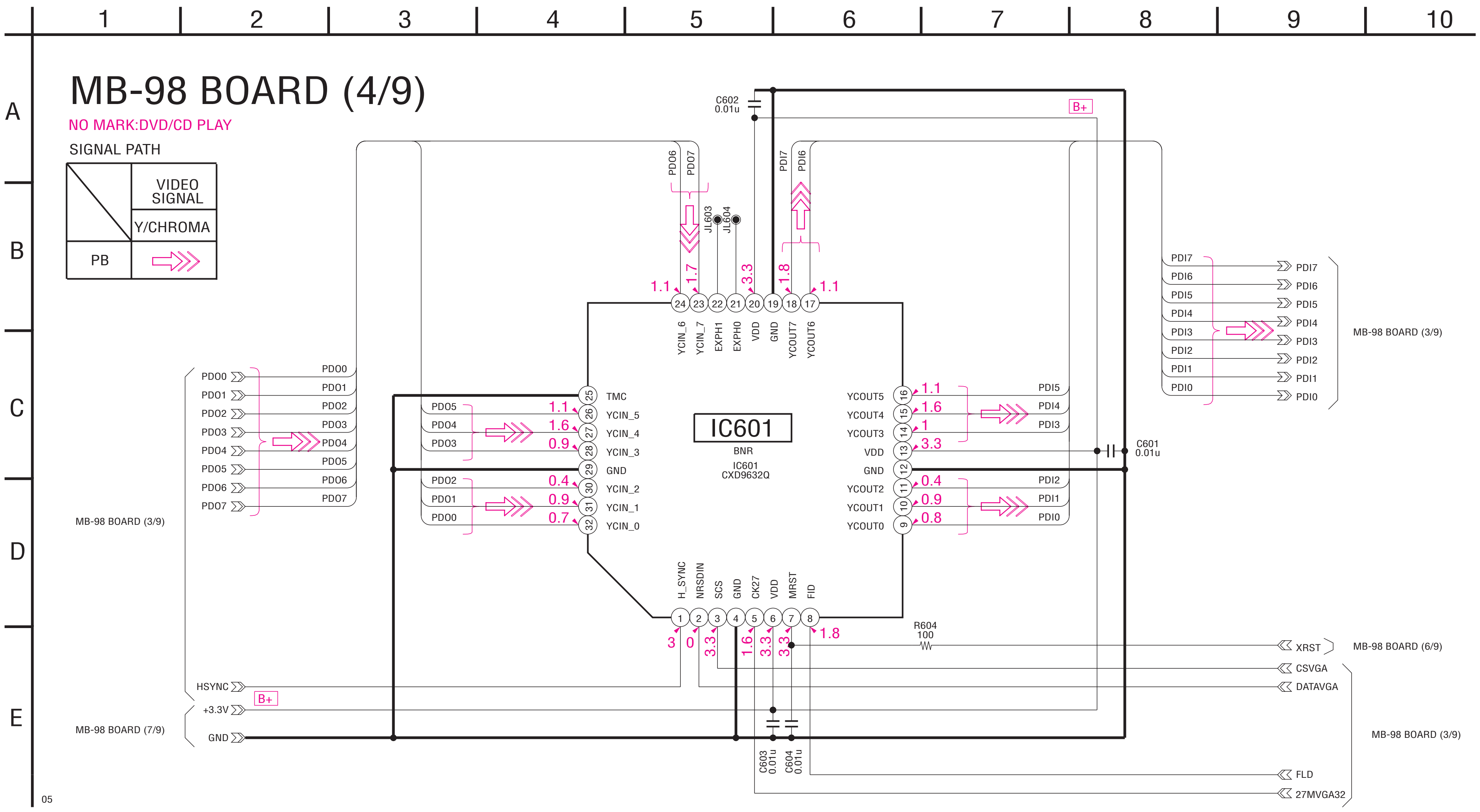


1.1 Vp-p (H)

❼ IC503 ⑱

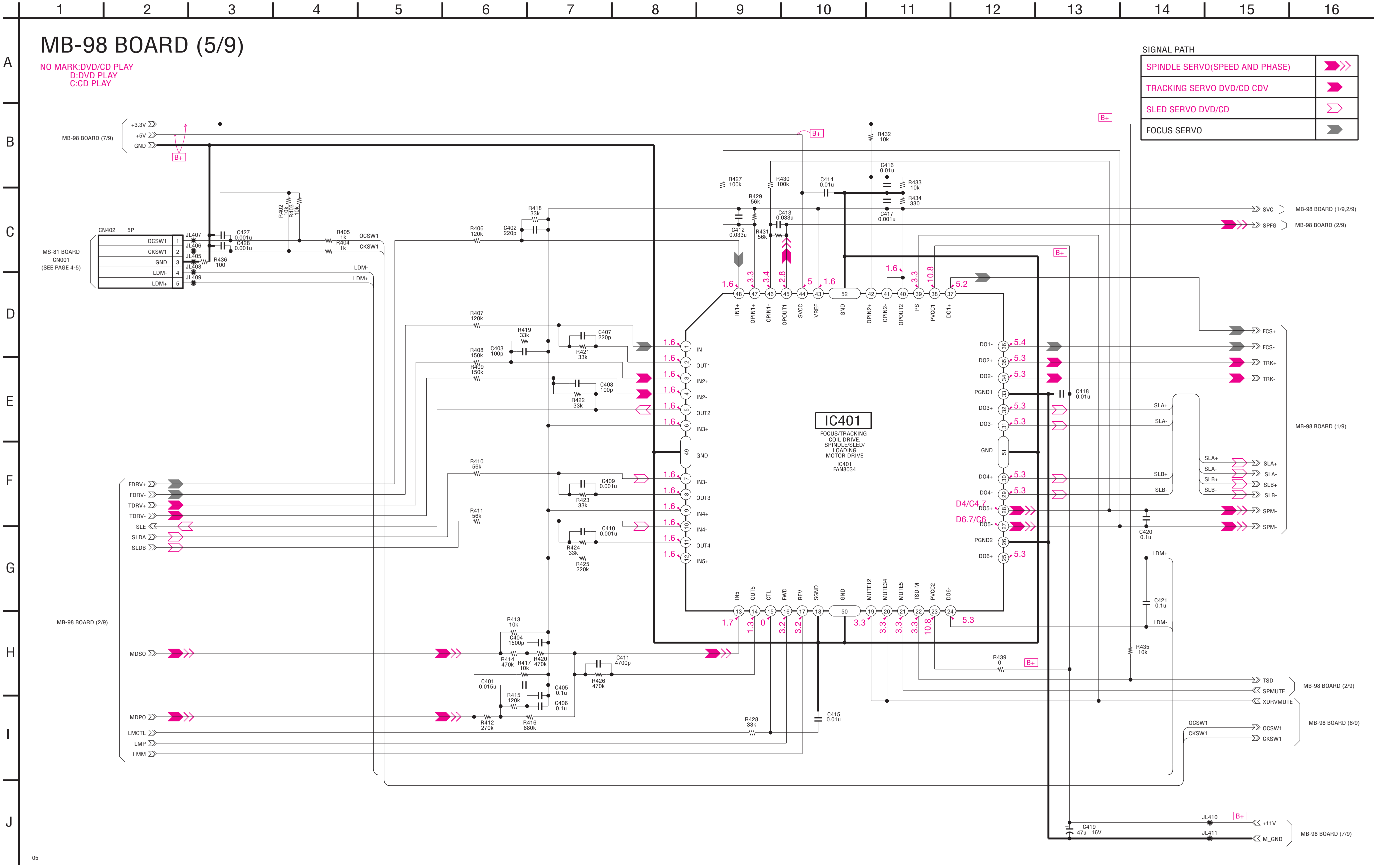


3.2 Vp-p (H)



MB-98 (DRIVE) SCHEMATIC DIAGRAM • **See page 4-7 for printed wiring board.**

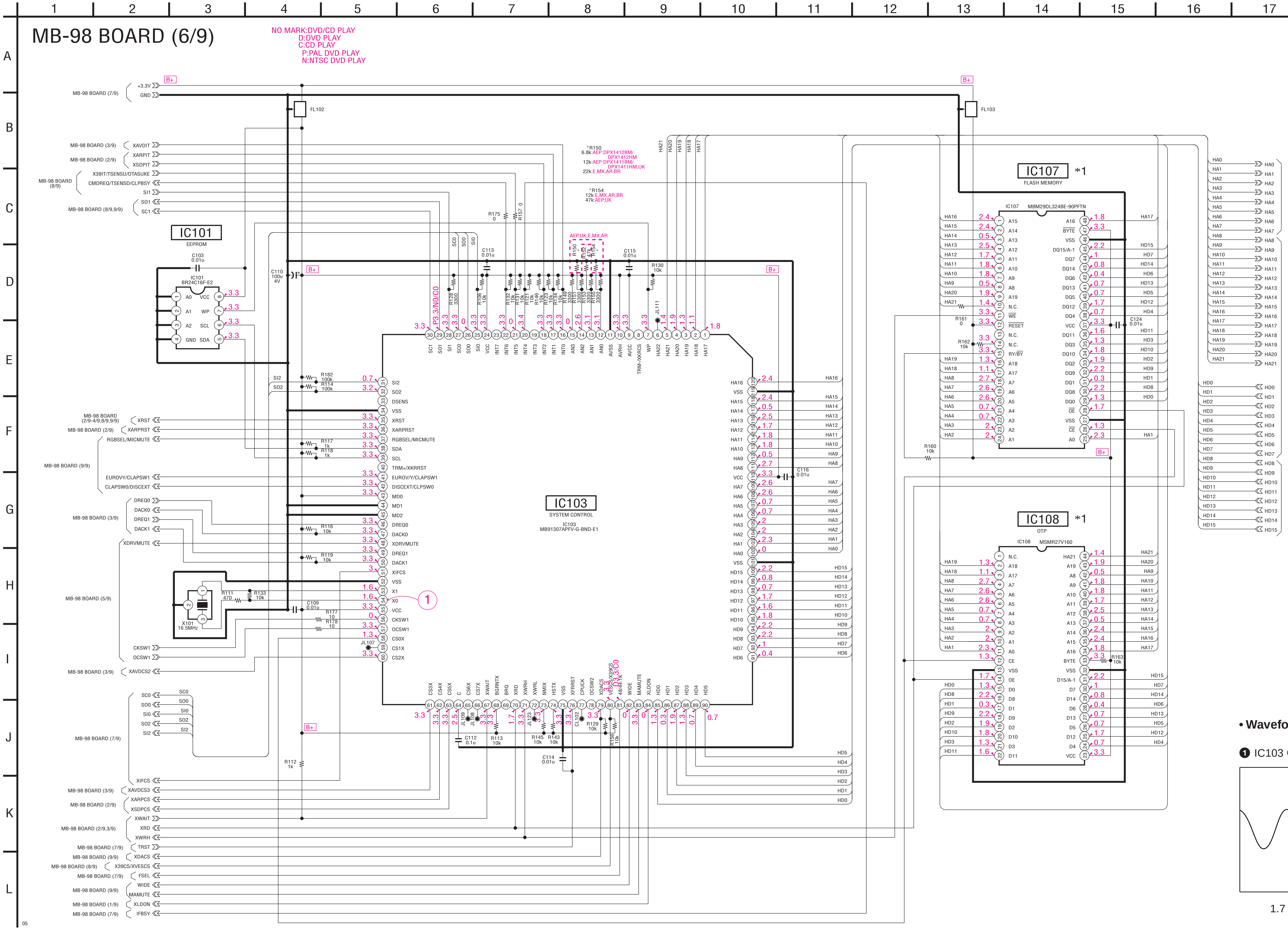
– Ref. No.: MB-98 board; 2,000 series –



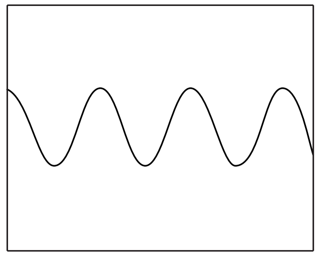
MB-98 (SYSTEM CONTROL) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

– Ref. No.: MB-98 board; 2,000 series –

*1: Either IC107 or IC108 is used.



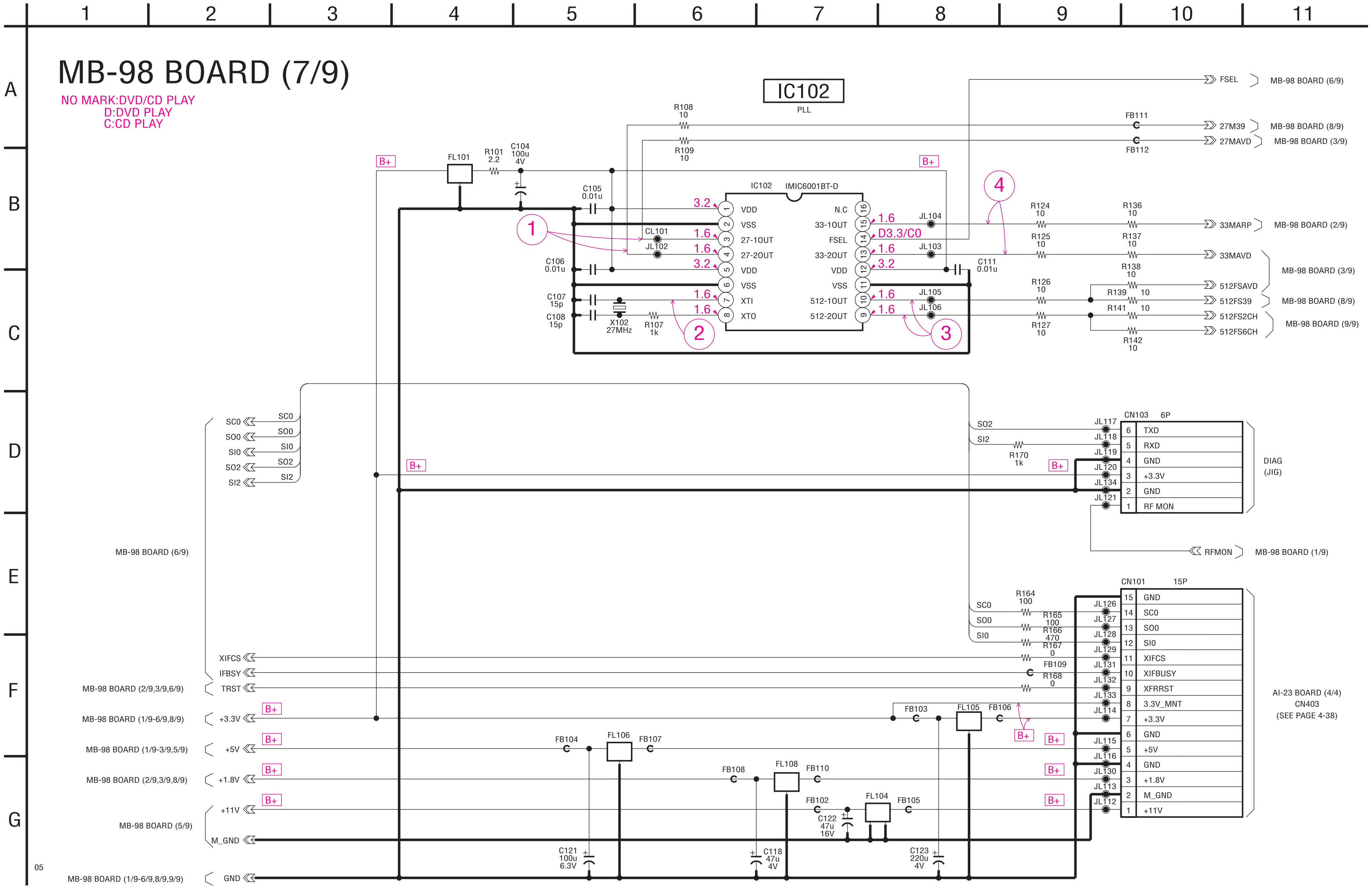
• **Waveform**



1.7 Vp-p (16.5 MHz)

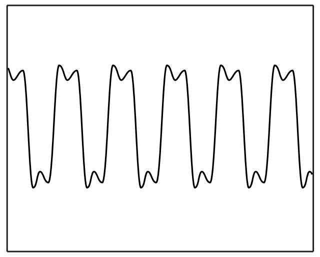
MB-98 (CLOCK GENERATOR) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

– Ref. No.: MB-98 board; 2,000 series –



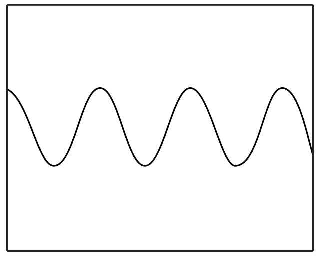
• Waveforms

❶ IC102 ③, ④



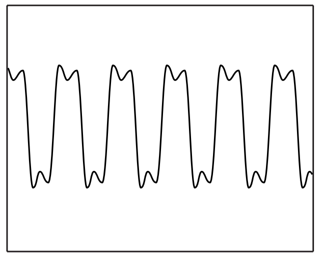
3.5 Vp-p (27 MHz)

❷ IC102 ⑦



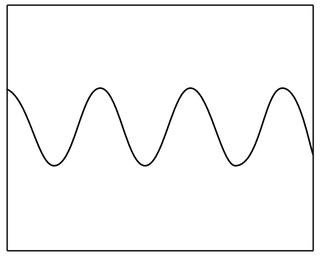
1.5 Vp-p (27 MHz)

❸ IC102 ⑨, ⑩



DVD : 3.3 Vp-p (24.57 MHz)
CD : 3.3 Vp-p (22.58 MHz)

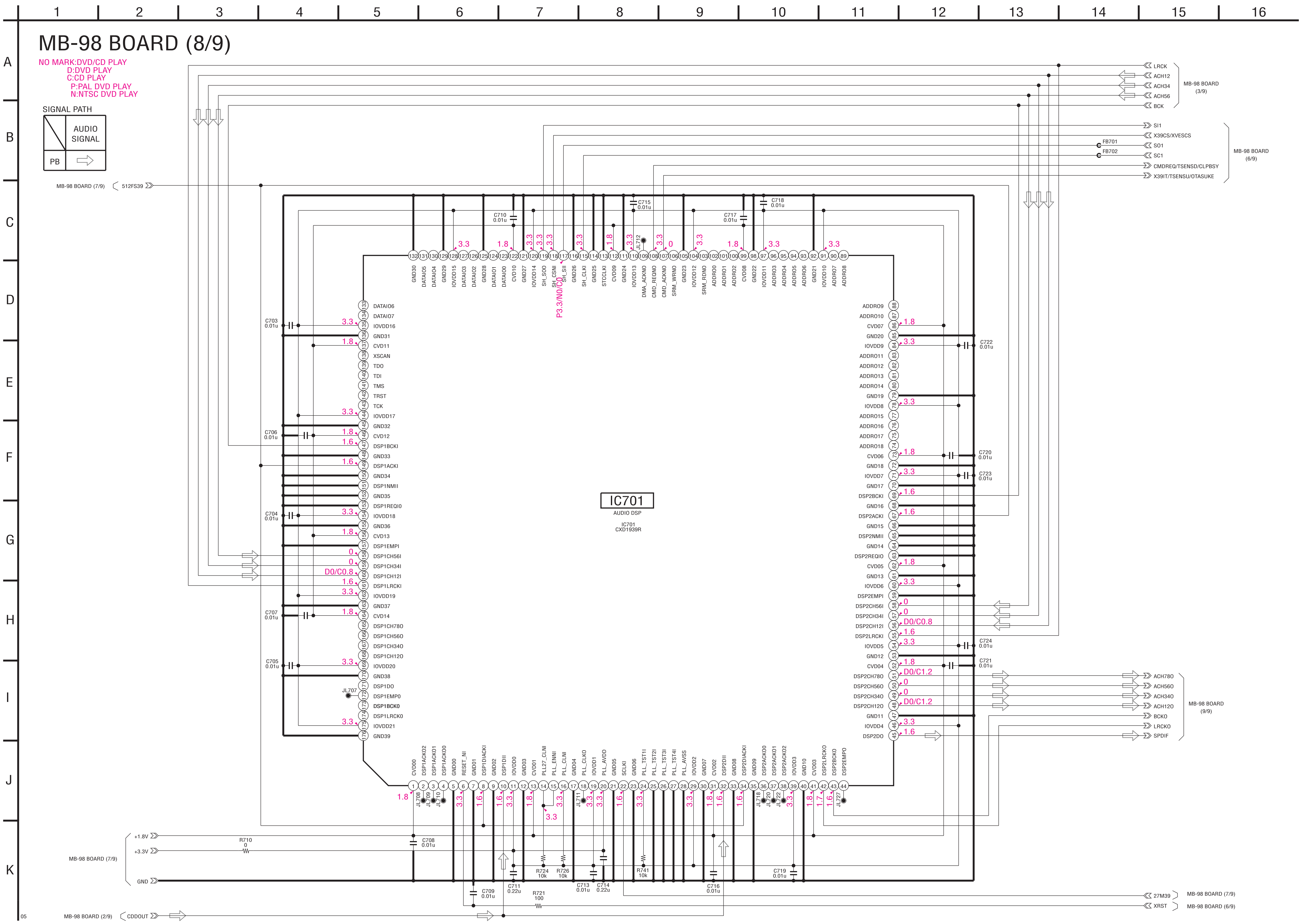
❹ IC102 ⑬, ⑮



3.2 Vp-p (33.87 MHz)

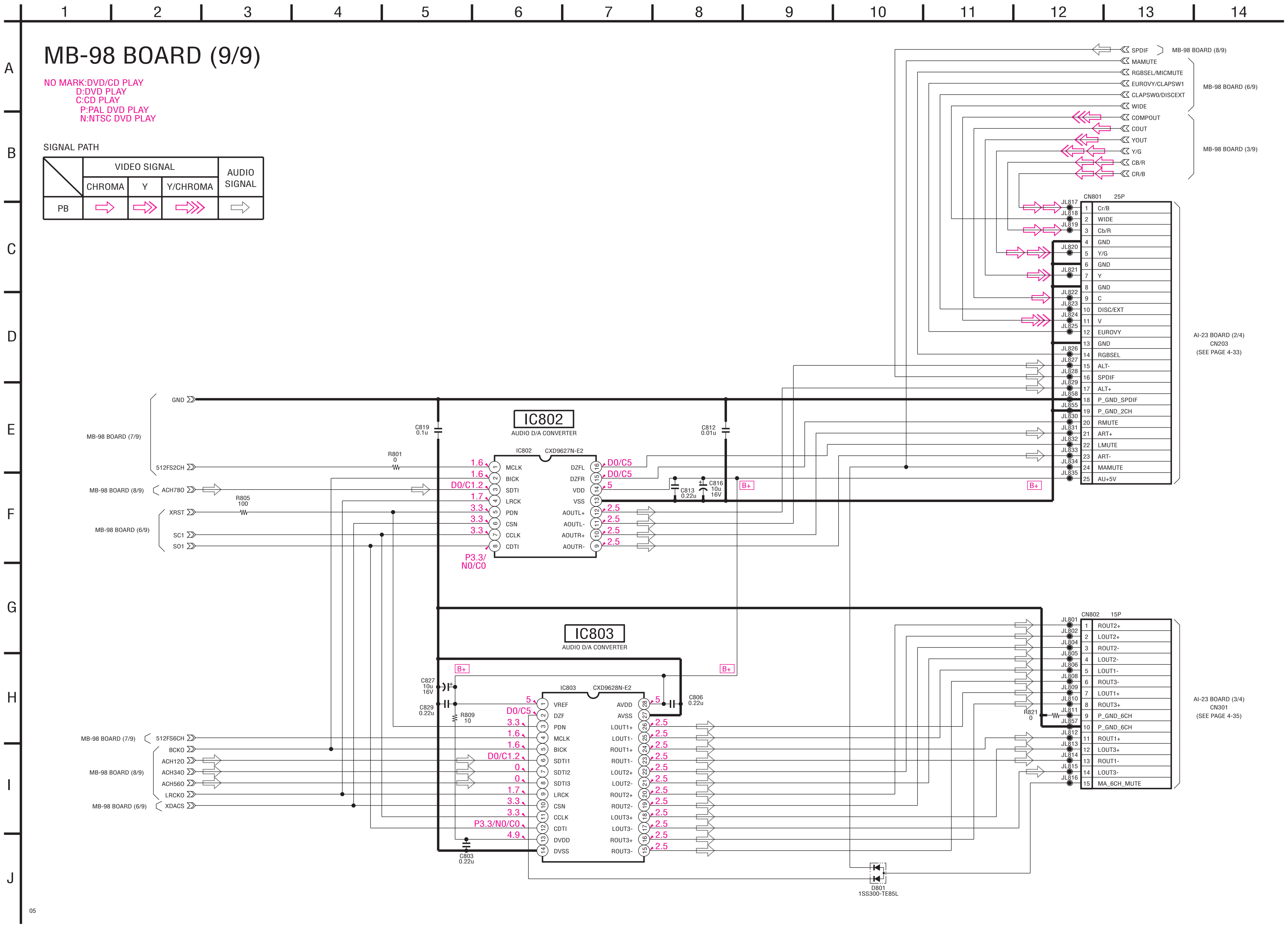
MB-98 (AUDIO DSP) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

– Ref. No.: MB-98 board; 2,000 series –



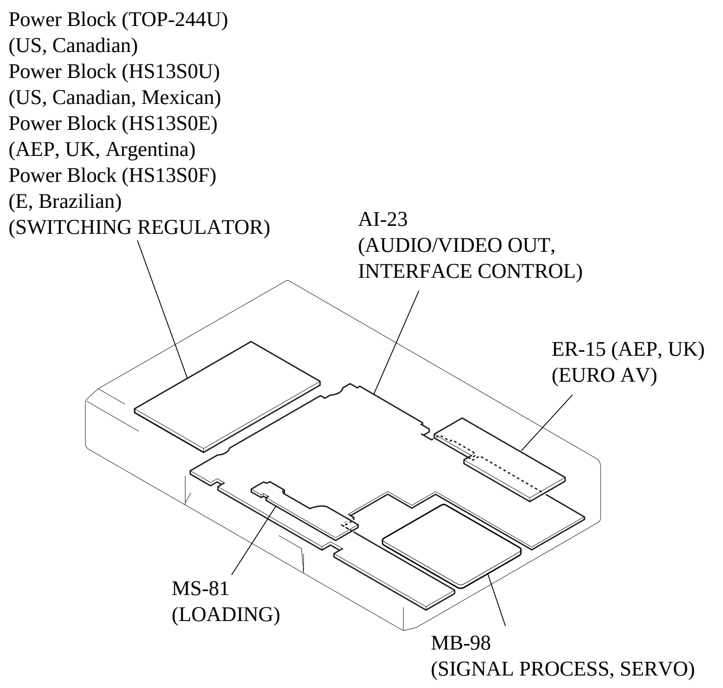
MB-98 (D/A CONVERTER) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

– Ref. No.: MB-98 board; 2,000 series –



AI-23 BOARD

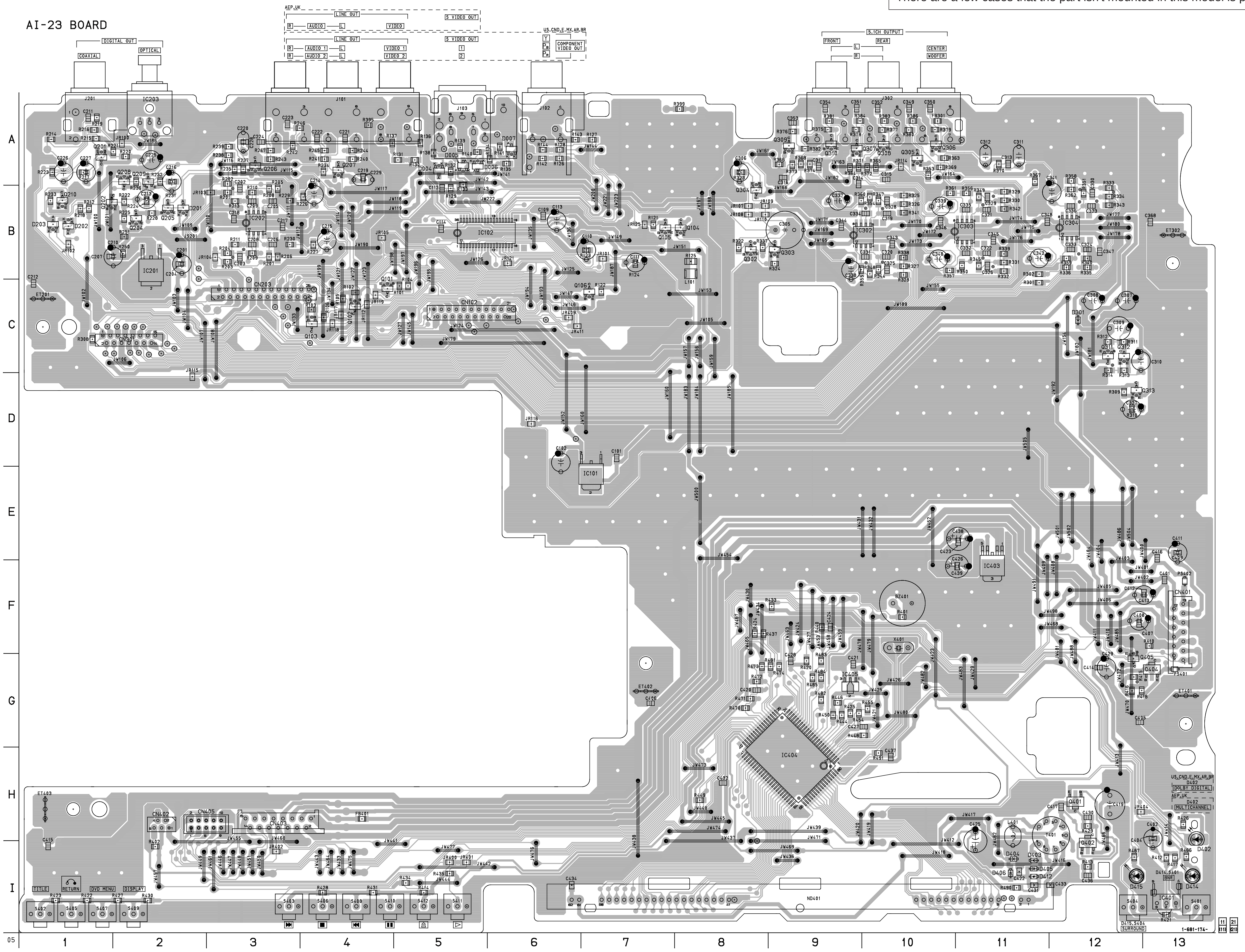
CN102	C-5	IC401	I-13
CN203	C-3	IC403	F-11
CN301	C-2	IC404	H-9
CN401	F-13	IC405	G-9
CN402	H-2		
CN403	H-3	Q104	B-8
CN405	H-3	Q105	B-7
		Q106	C-7
D004	A-5	Q201	A-1
D005	A-5	Q202	B-1
D006	A-5	Q204	B-2
D007	A-6	Q205	B-2
D201	B-2	Q206	A-3
D202	B-1	Q207	A-4
D203	B-1	Q208	A-2
D301	C-12	Q209	A-2
D402	I-13	Q210	B-1
D403	I-11	Q302	B-8
D404	I-11	Q303	B-9
D405	I-11	Q304	B-8
D406	I-11	Q305	A-10
D412	I-11	Q306	A-10
D414	I-13	Q307	A-10
D415	I-12	Q308	A-10
		Q309	A-9
IC101	E-7	Q310	A-9
IC102	B-6	Q311	C-12
IC201	B-2	Q312	C-12
IC202	B-3	Q313	D-12
IC203	A-2	Q401	H-12
IC302	B-10	Q402	I-12
IC303	B-11	Q404	G-13
IC304	B-12	Q405	G-13



AI-23 (AUDIO/VIDEO OUT, INTERFACE CONTROL) PRINTED WIRING BOARD

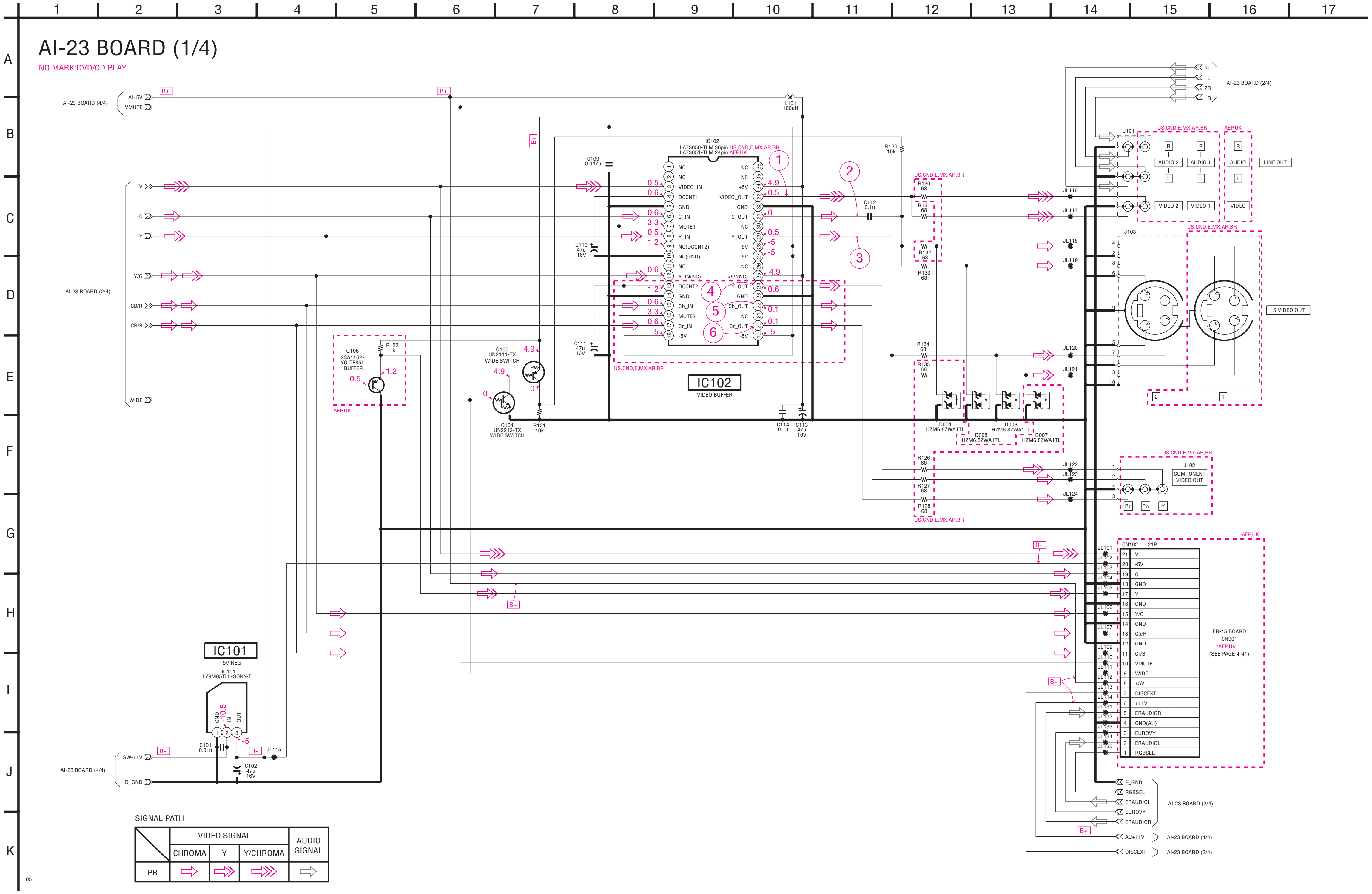
– Ref. No.: AI-23 board; 1,000 series –

There are a few cases that the part isn't mounted in this model is printed on this diagram.



AI-23 (VIDEO BUFFER) SCHEMATIC DIAGRAM • See page 4-29 for printed wiring board.

– Ref. No.: AI-23 board; 1,000 series –

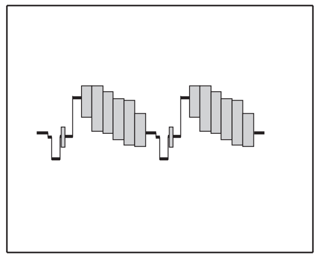


SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	⇨	⇨⇨	⇨⇨⇨	⇨

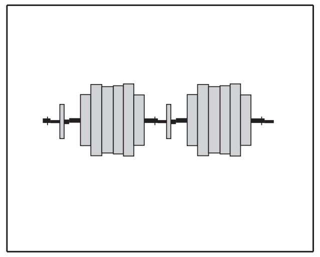
• Waveforms

❶ IC102 ㉑ : AEP, UK
IC102 ㉝ : US, CND, E, MX, AR, BR



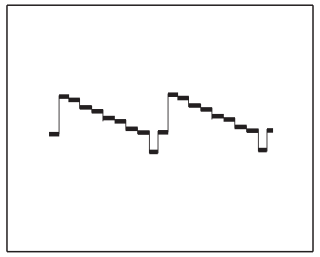
2.4 Vp-p (H)

❷ IC102 ⑲ : AEP, UK
IC102 ㉛ : US, CND, E, MX, AR, BR



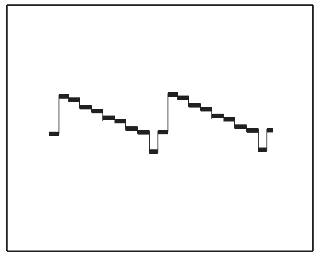
1.8 Vp-p (H)

❸ IC102 ⑰ : AEP, UK
IC102 ㉙ : US, CND, E, MX, AR, BR



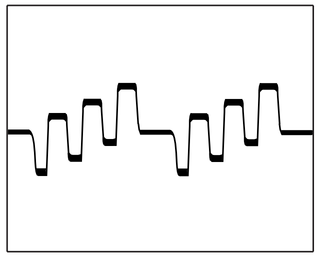
2.0 Vp-p (H)

❹ IC102 ㉔ : US, CND, E, MX, AR, BR



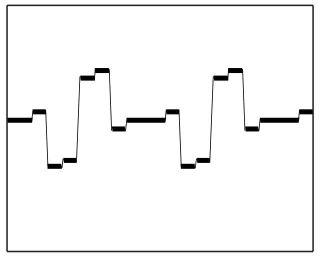
2.0 Vp-p (H)

❺ IC102 ㉒ : US, CND, E, MX, AR, BR



1.3 Vp-p (H)

❻ IC102 ⑳ : US, CND, E, MX, AR, BR

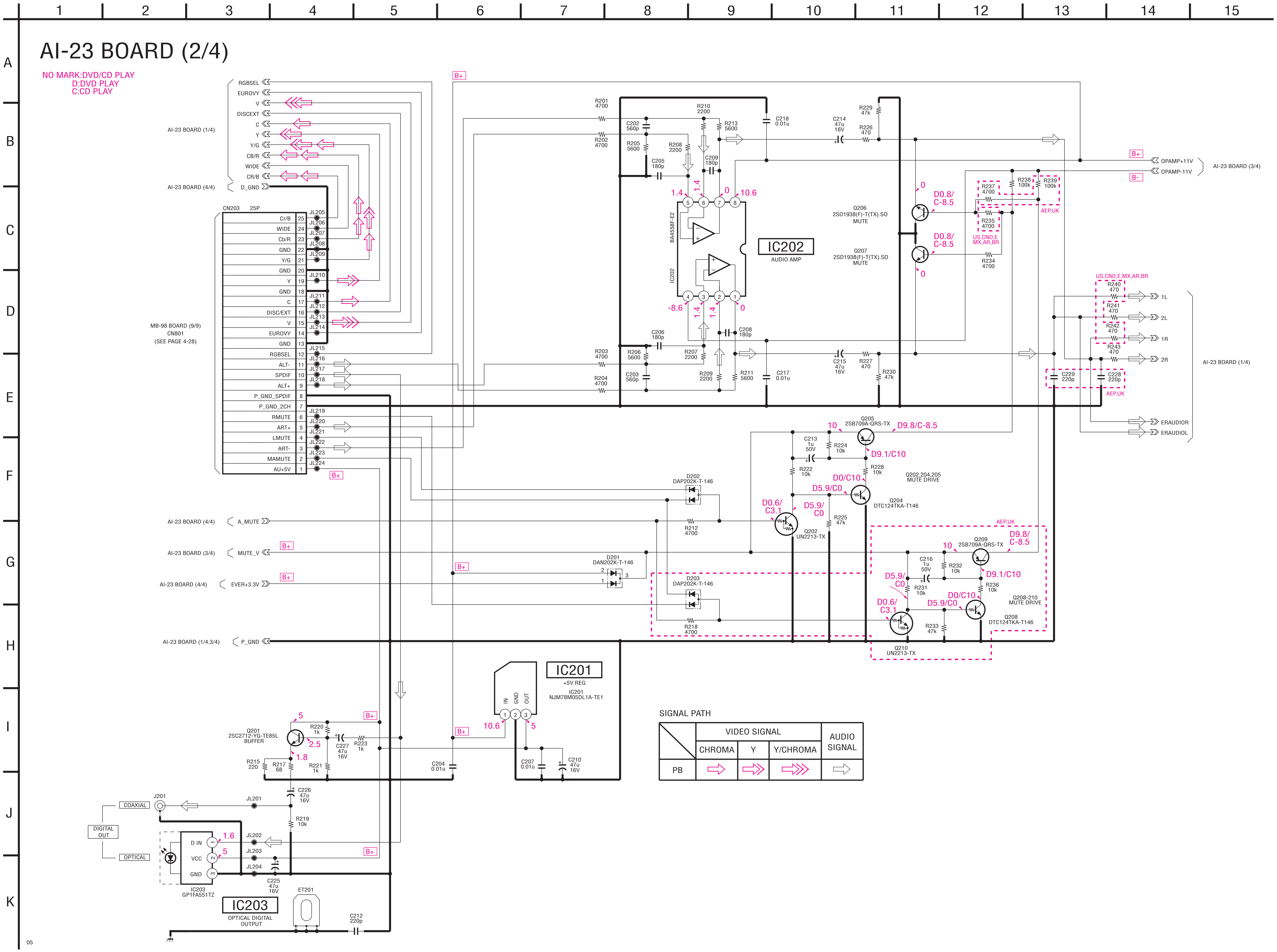


1.3 Vp-p (H)

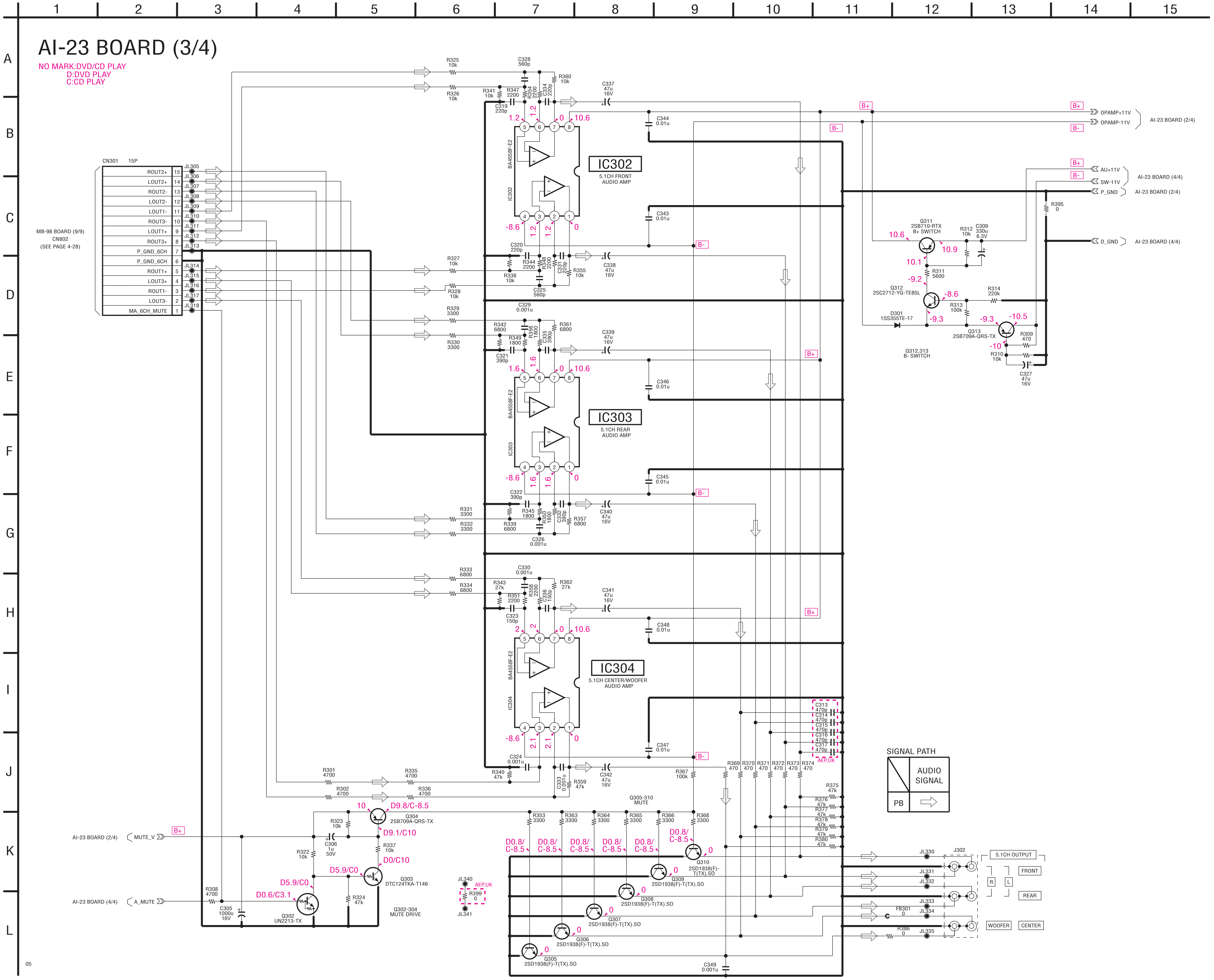
VIDEO BUFFER
AI-23 (1/4)

AI-23 (AUDIO AMP) SCHEMATIC DIAGRAM • See page 4-29 for printed wiring board.

– Ref. No.: AI-23 board; 1,000 series –



AI-23 (5.1CH AUDIO AMP) SCHEMATIC DIAGRAM • **See page 4-29 for printed wiring board.**
– Ref. No.: AI-23 board; 1,000 series –

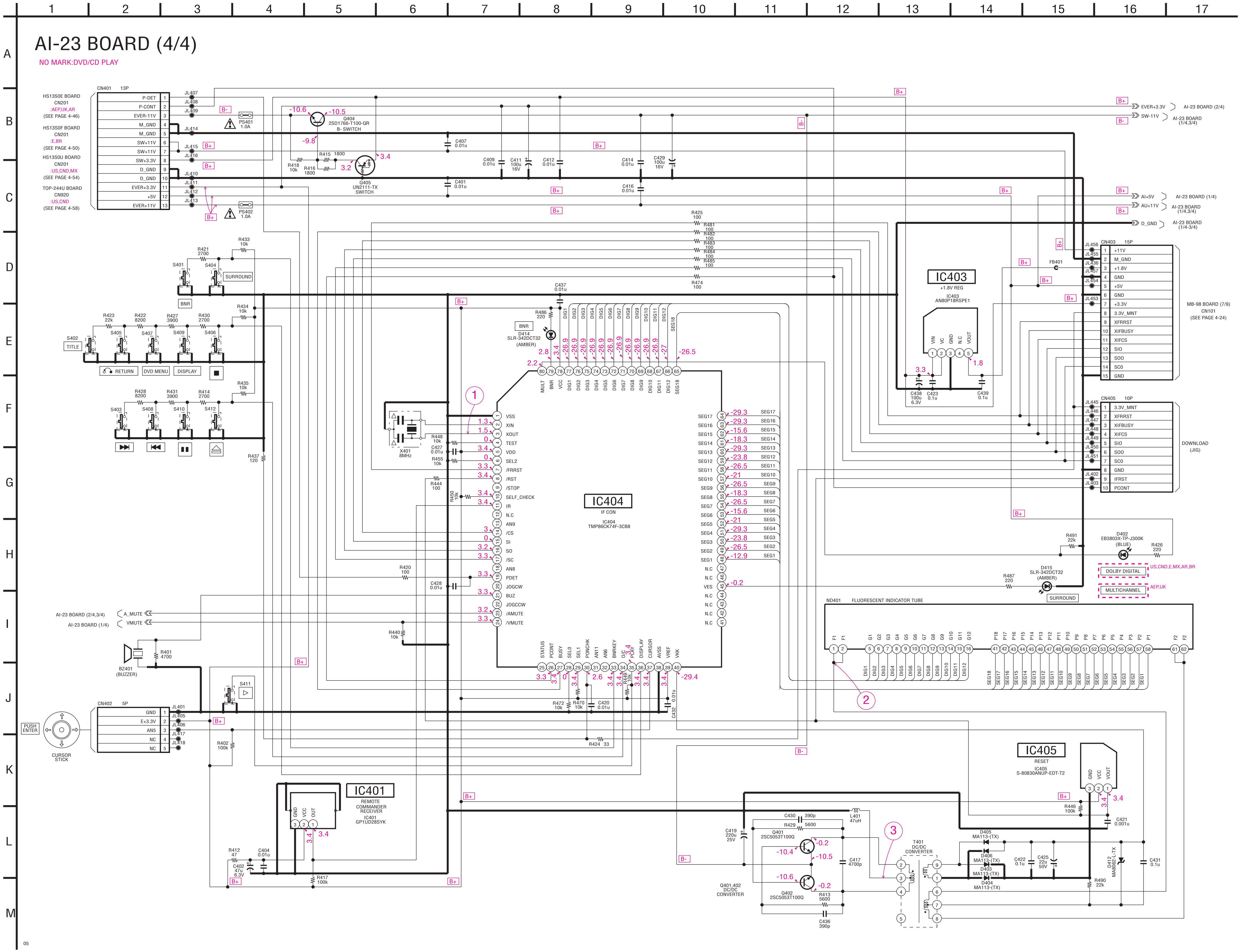


5.1CH AUDIO AMP
AI-23 (3/4)

AI-23 (IF CON) SCHEMATIC DIAGRAM • **See page 4-29 for printed wiring board.**

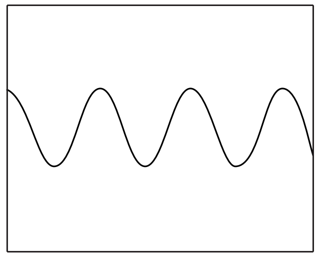
– Ref. No.: AI-23 board; 1,000 series –

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



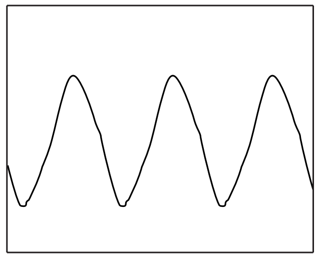
• **Waveforms**

❶ IC404 ③



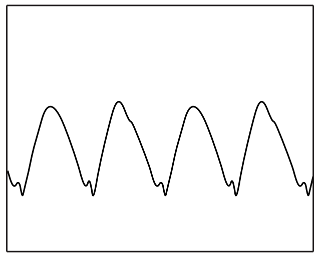
3.4 Vp-p (8 MHz)

❷ ND401 ①, ②



8 Vp-p (200 kHz)

❸ T401 ③



20 Vp-p (409 kHz)

05

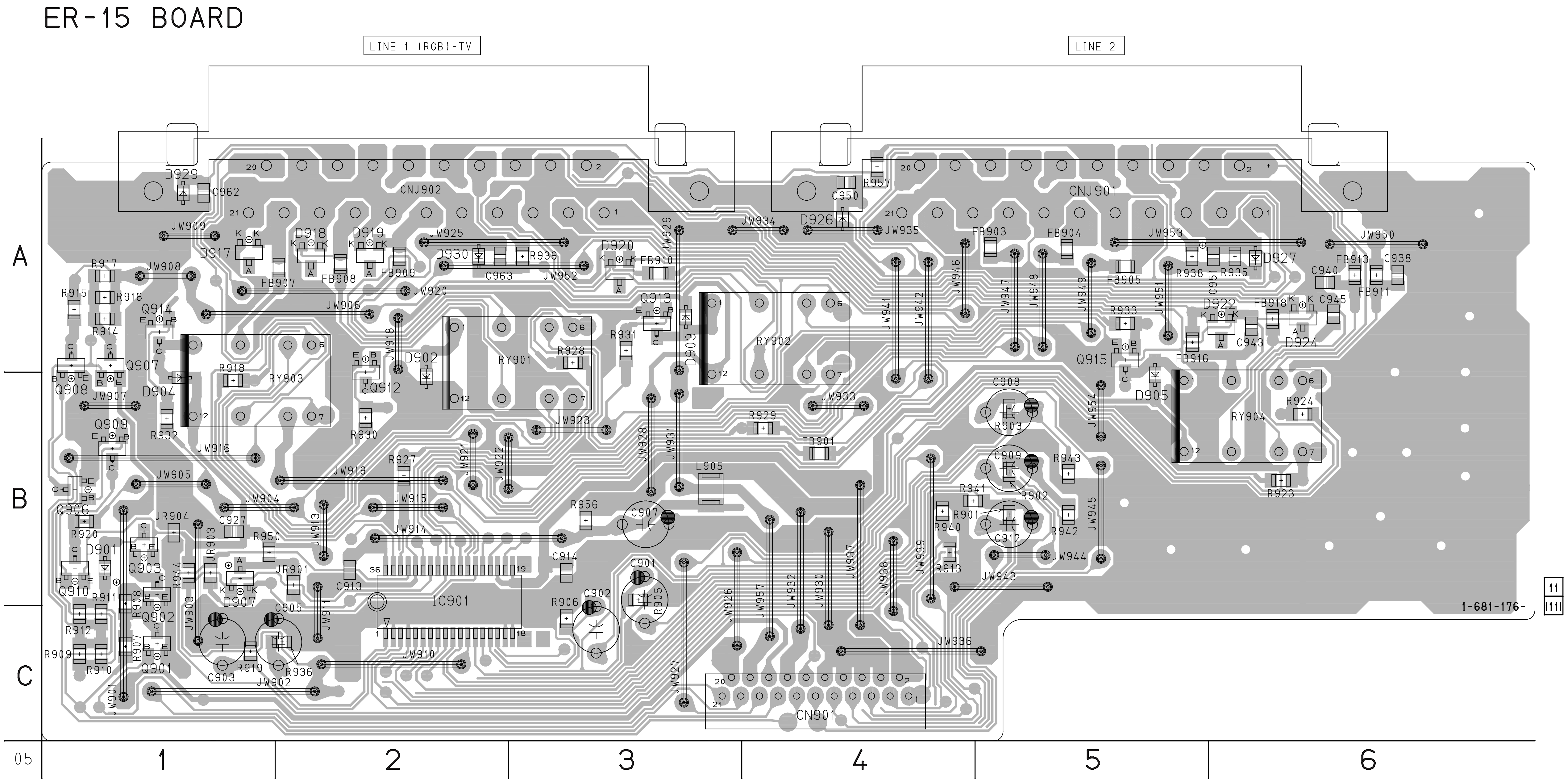
ER-15 (EURO AV) PRINTED WIRING BOARD

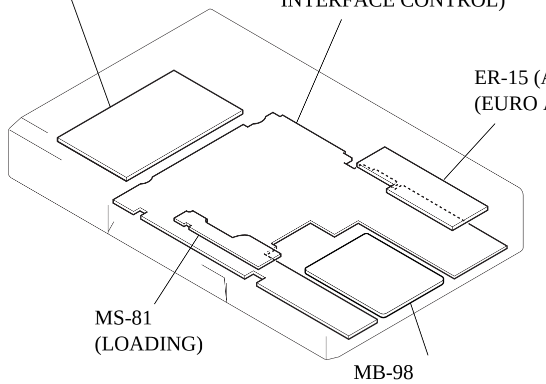
– Ref. No.: ER-15 board; 1,000 series –

– AEP, UK –

There are a few cases that the part isn't mounted in this model is printed on this diagram.

ER-15 BOARD	
CN901	C-4
D901	B-1
D902	A-2
D903	A-3
D904	B-1
D905	B-5
D907	B-1
D917	A-1
D918	A-2
D919	A-2
D920	A-3
D922	A-6
D924	A-6
D926	A-4
D927	A-6
D929	A-1
D930	A-2
IC901	B-2
Q901	C-1
Q902	C-1
Q903	B-1
Q906	B-1
Q907	A-1
Q908	A-1
Q909	B-1
Q910	B-1
Q912	B-2
Q913	A-3
Q914	A-1
Q915	A-5

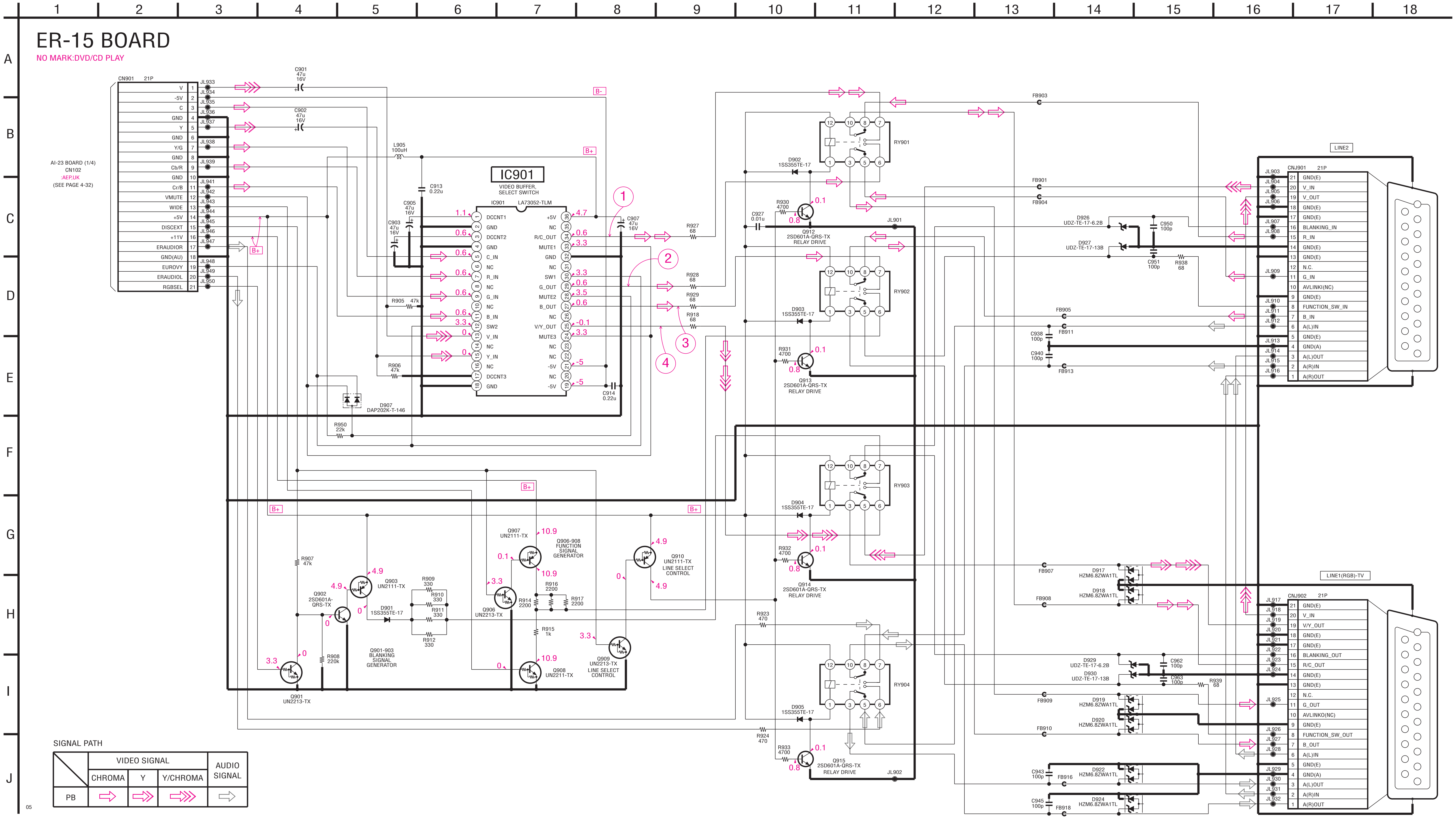




ER-15 (EURO AV) SCHEMATIC DIAGRAM

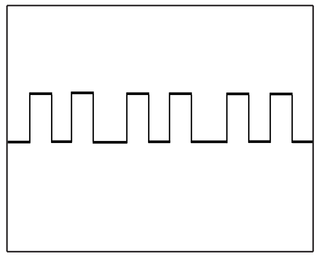
– Ref. No.: ER-15 board; 1,000 series –

– AEP, UK –



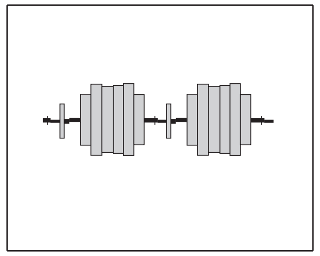
• Waveforms

❶ IC901 ㉞ (LINE : RGB mode)



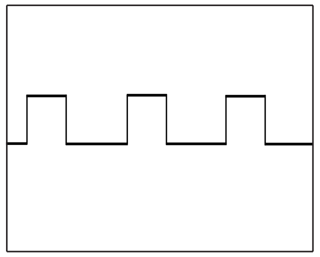
1.4 Vp-p (H)

❶ IC901 ㉞ (LINE : S VIDEO mode)



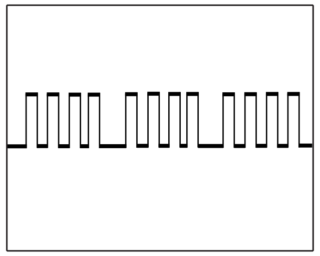
1.7 Vp-p (H)

❷ IC901 ㉙ (LINE : RGB mode)



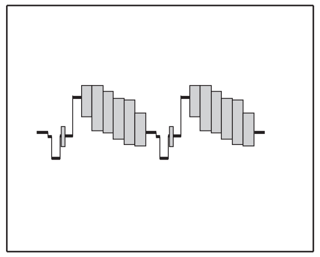
1.4 Vp-p (H)

❸ IC901 ㉗ (LINE : RGB mode)



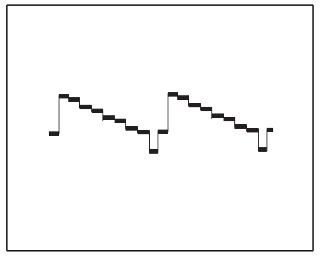
1.4 Vp-p (H)

❹ IC901 ㉕



2.4 Vp-p (H)

❹ IC901 ㉕ (LINE : S VIDEO mode)



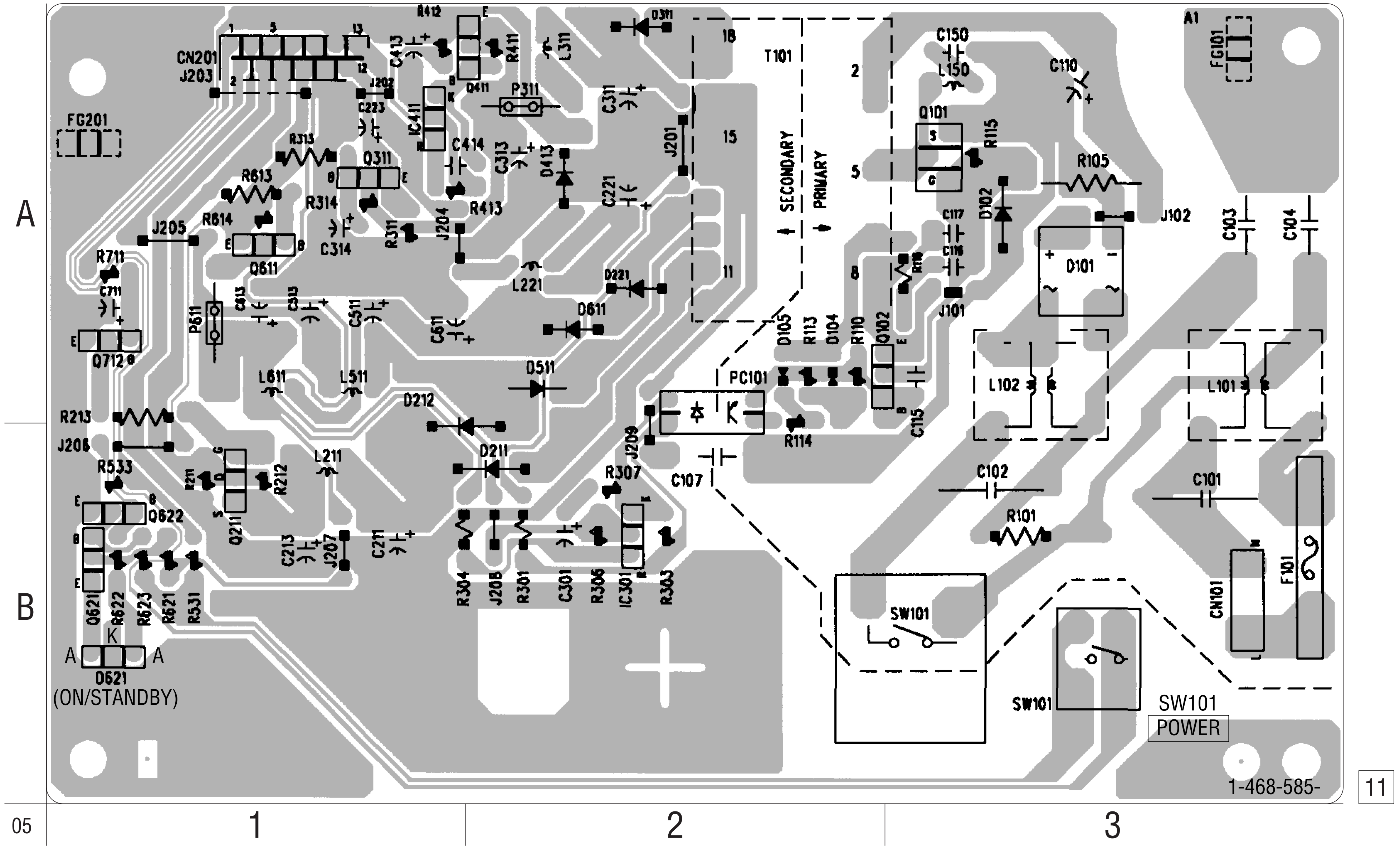
2.0 Vp-p (H)

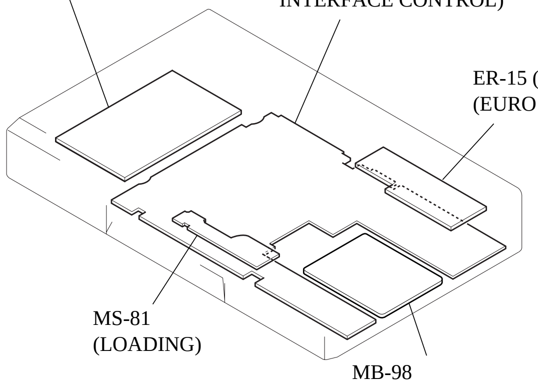
HS13S0E (SWITCHING REGULATOR) PRINTED WIRINNG BOARD
– Ref. No.: HS13S0E board; 3,000 series –
– AEP, UK, AR –

There are a few cases that the part isn't mounted in this model is printed on this diagram.

HS13S0E BOARD

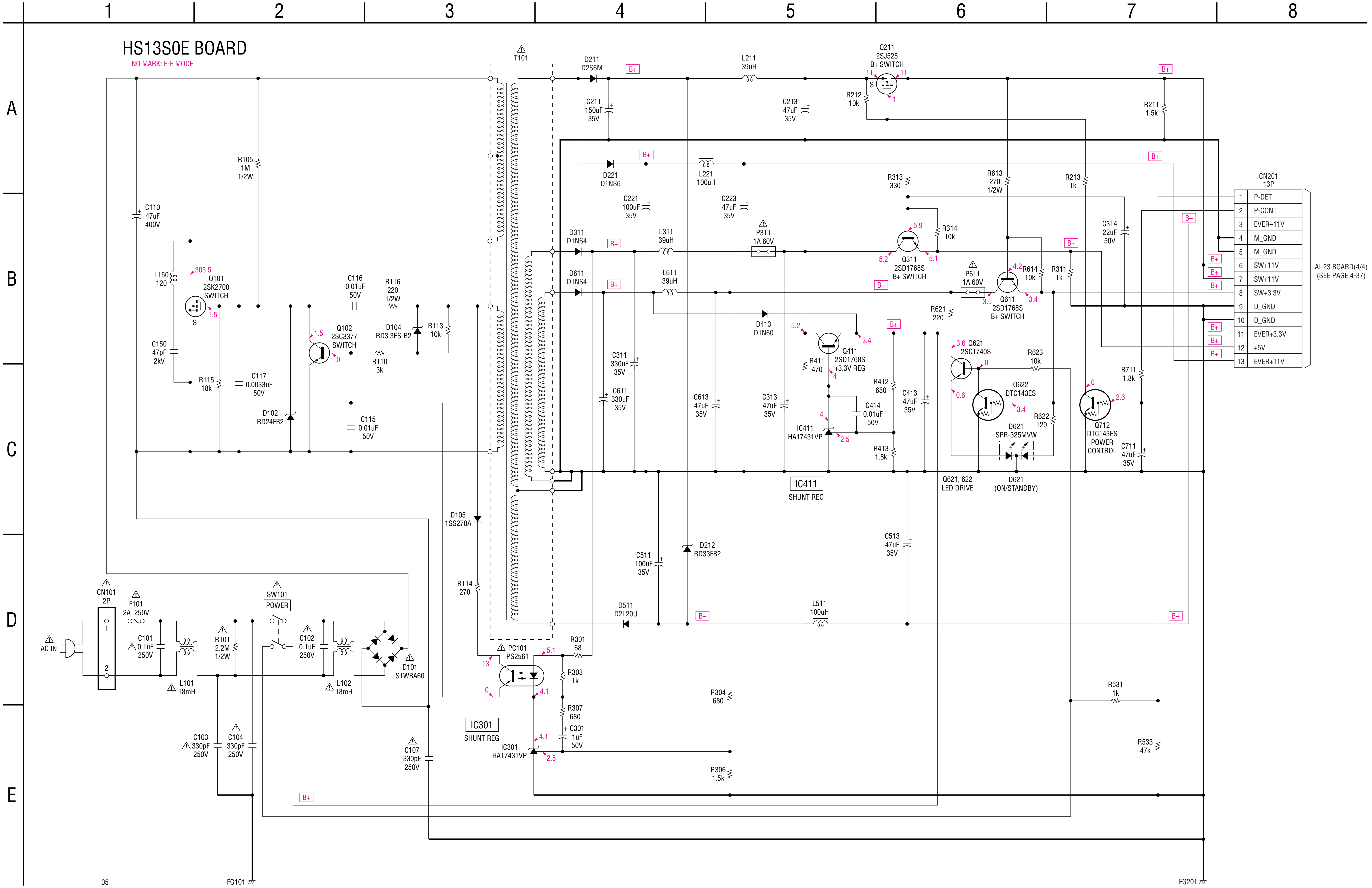
HS13S0E BOARD	
CN101	B-3
CN201	A-1
D101	A-3
D102	A-3
D104	A-2
D105	A-2
D211	B-2
D212	A-1
D221	A-2
D311	A-2
D413	A-2
D511	A-2
D611	A-2
D621	B-1
IC301	B-2
IC411	A-1
Q101	A-3
Q102	A-2
Q211	B-1
Q311	A-1
Q411	A-2
Q611	A-1
Q621	B-1
Q622	B-1
Q712	A-1





HS13S0E (SWITCHING REGULATOR) SCHEMATIC DIAGRAM
– Ref. No.: HS13S0E board; 3,000 series –
– AEP, UK, AR –

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



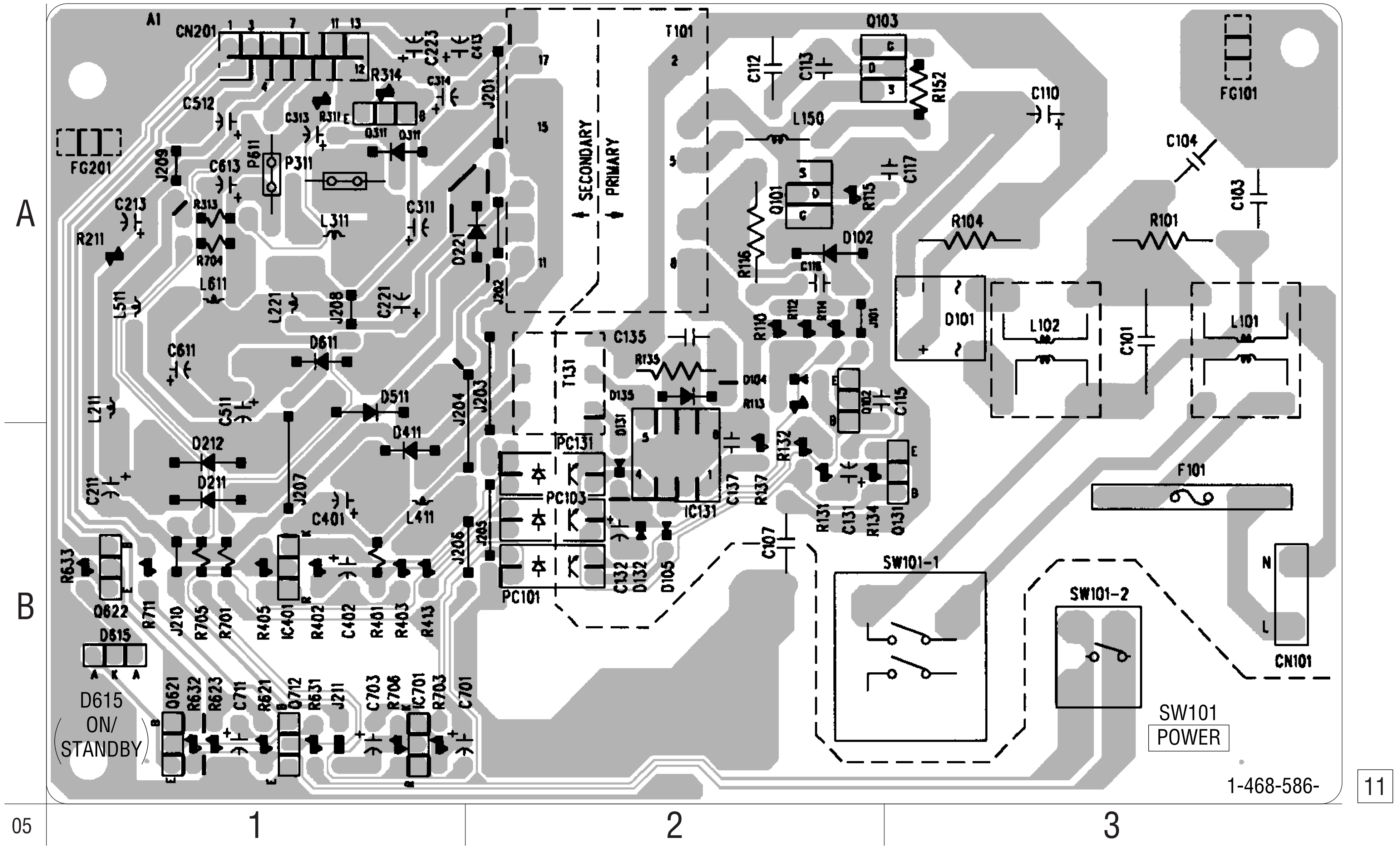
SWITCHING REGULATOR
HS13S0E

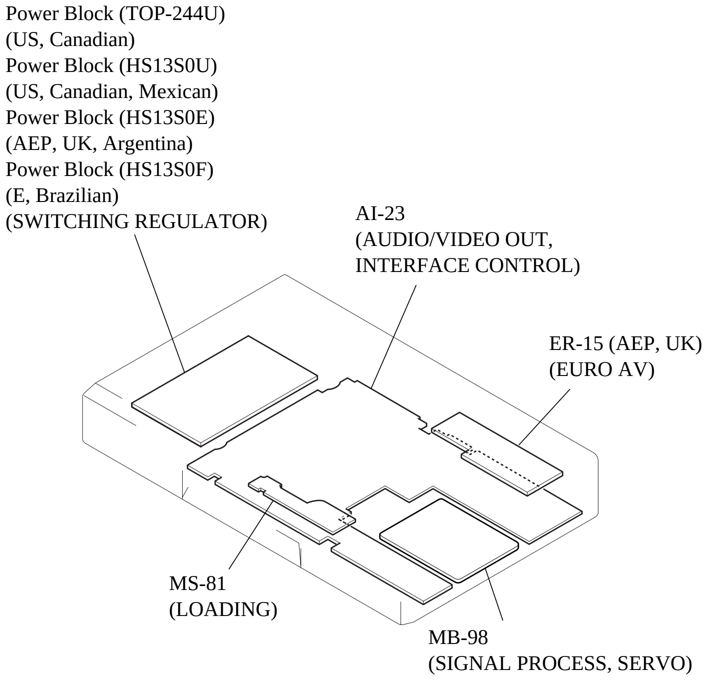
HS13S0F (SWITCHING REGULATOR) PRINTED WIRINNG BOARD
– Ref. No.: HS13S0F board; 4,000 series –
– E, BR –

There are a few cases that the part isn't mounted in this model is printed on this diagram.

HS13S0F BOARD

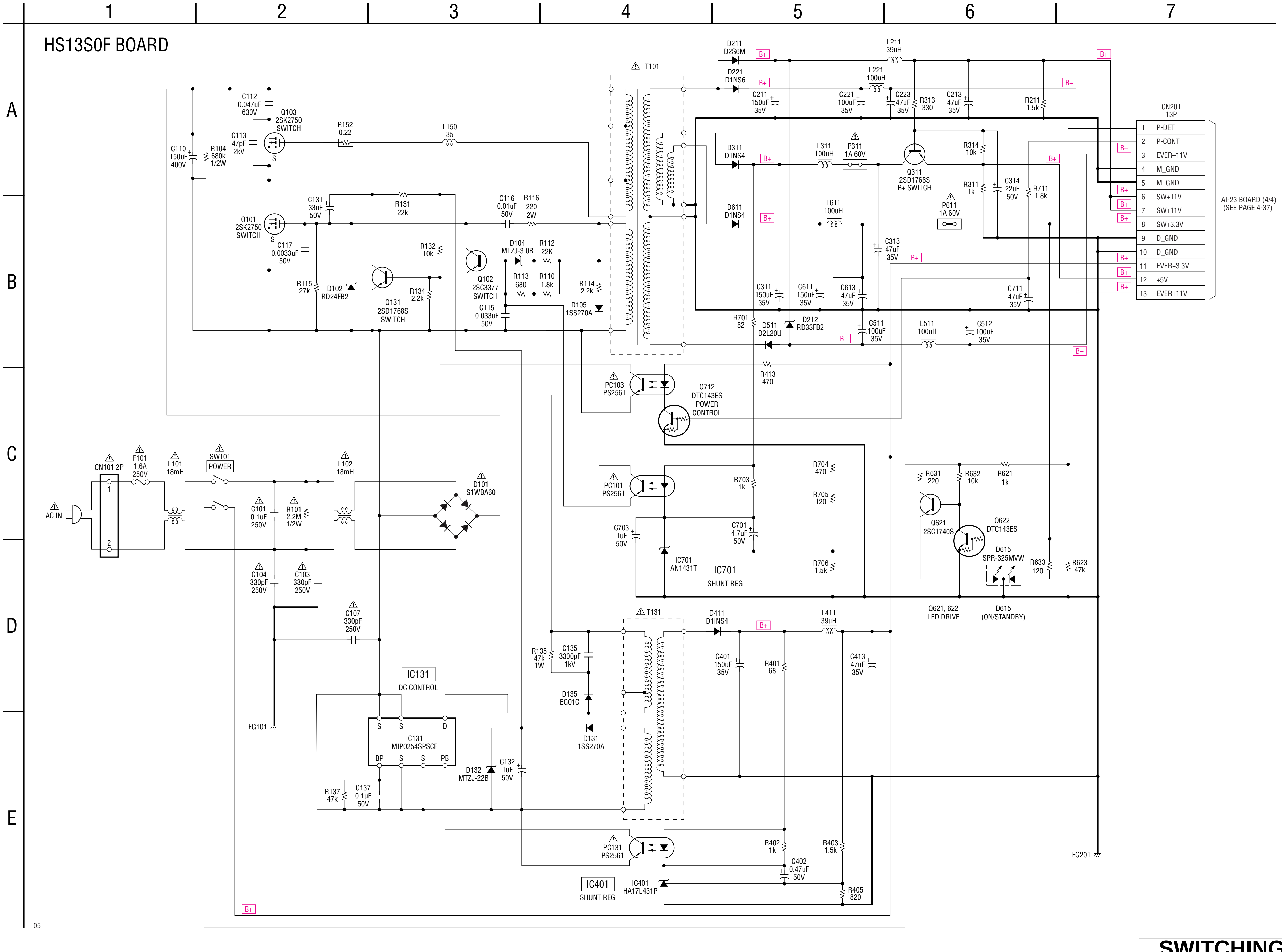
HS13S0F BOARD	
CN101	B-3
CN201	A-1
D101	A-3
D102	A-2
D104	A-2
D105	B-2
D131	B-2
D132	B-2
D135	A-2
D211	B-1
D212	B-1
D221	A-2
D311	A-1
D411	B-1
D511	A-1
D611	A-1
D615	B-1
IC131	B-2
IC401	B-1
IC701	B-1
Q101	A-2
Q102	A-2
Q103	A-2
Q131	B-3
Q311	A-1
Q621	B-1
Q622	B-1
Q712	B-1





HS13S0F (SWITCHING REGULATOR) SCHEMATIC DIAGRAM
– Ref. No.: HS13S0F board; 4,000 series –
– E, BR –

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



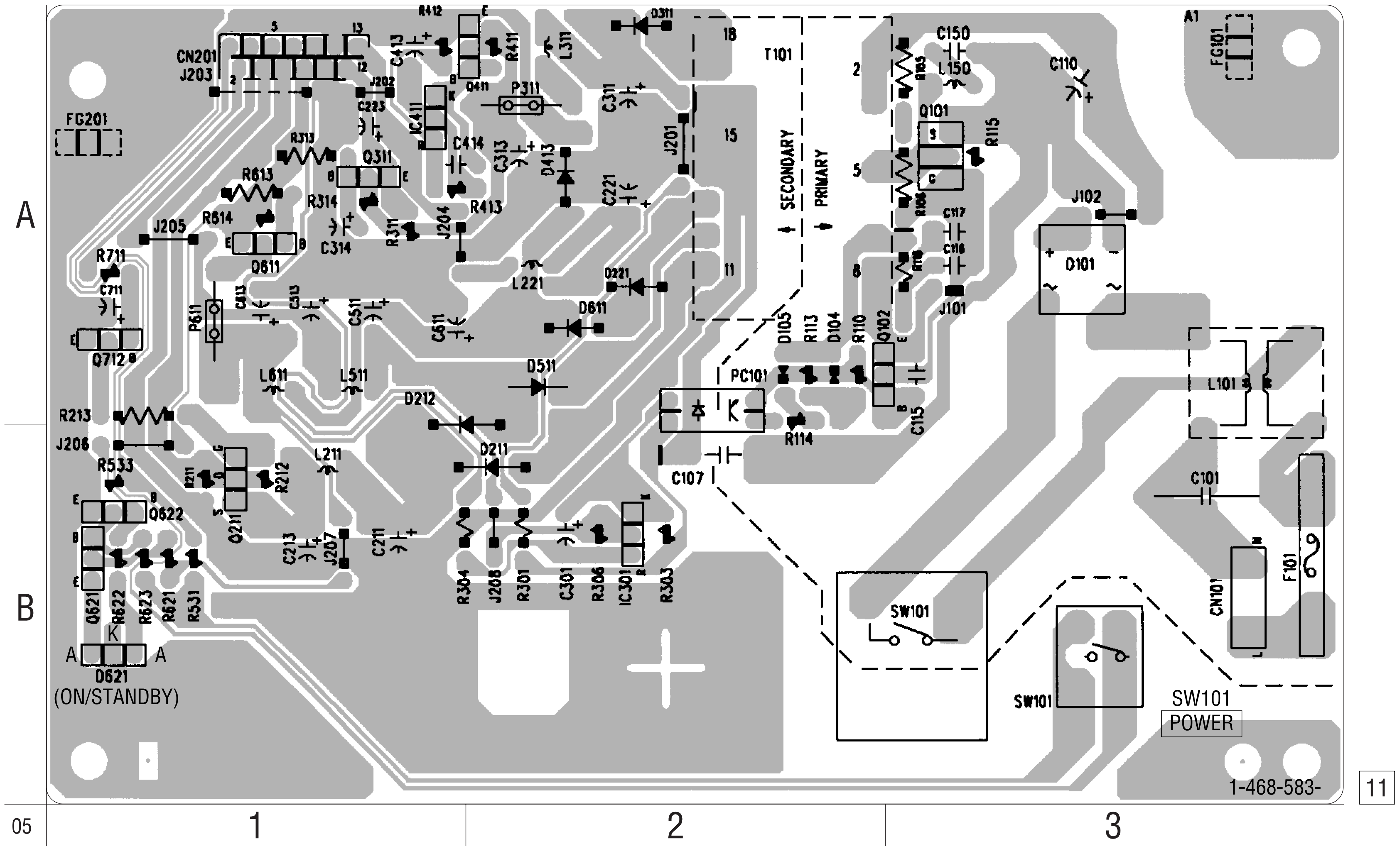
SWITCHING REGULATOR
HS13S0F

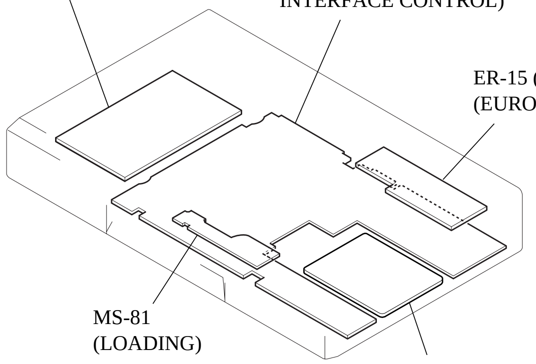
HS13S0U (SWITCHING REGULATOR) PRINTED WIRINNG BOARD
– Ref. No.: HS13S0U board; 5,000 series –
– US, CND, MX –

There are a few cases that the part isn't mounted in this model is printed on this diagram.

HS13S0U BOARD

HS13S0U BOARD	
CN101	B-3
CN201	A-1
D101	A-3
D104	A-2
D105	A-2
D211	B-2
D212	A-1
D221	A-2
D311	A-2
D413	A-2
D511	A-2
D611	A-2
D621	B-1
IC301	B-2
IC411	A-1
Q101	A-3
Q102	A-2
Q211	B-1
Q311	A-1
Q411	A-2
Q611	A-1
Q621	B-1
Q622	B-1
Q712	A-1

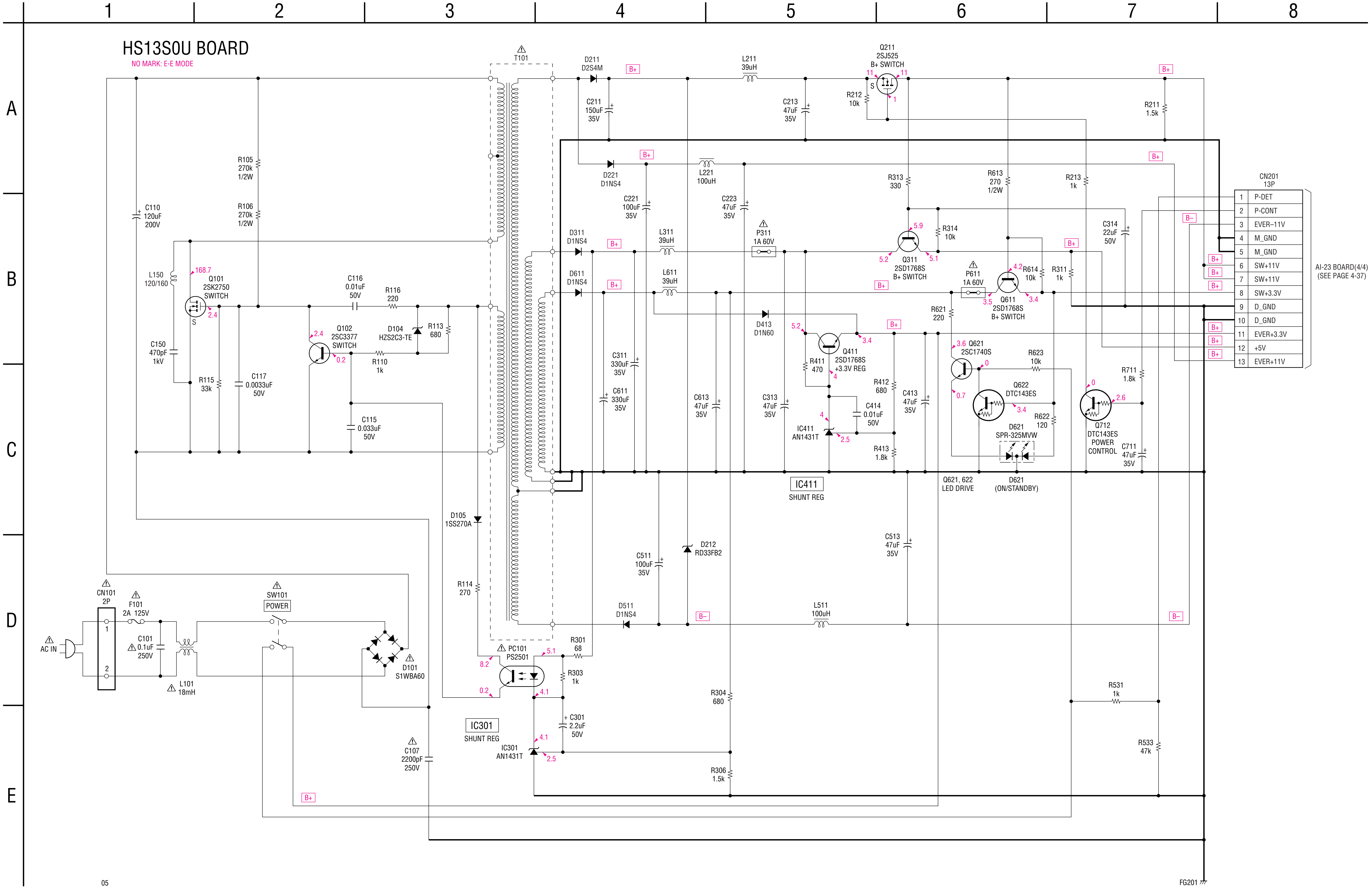




SWITCHING REGULATOR
HS13S0U

HS13S0U (SWITCHING REGULATOR) SCHEMATIC DIAGRAM
– Ref. No.: HS13S0U board; 5,000 series –
– US, CND, MX –

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



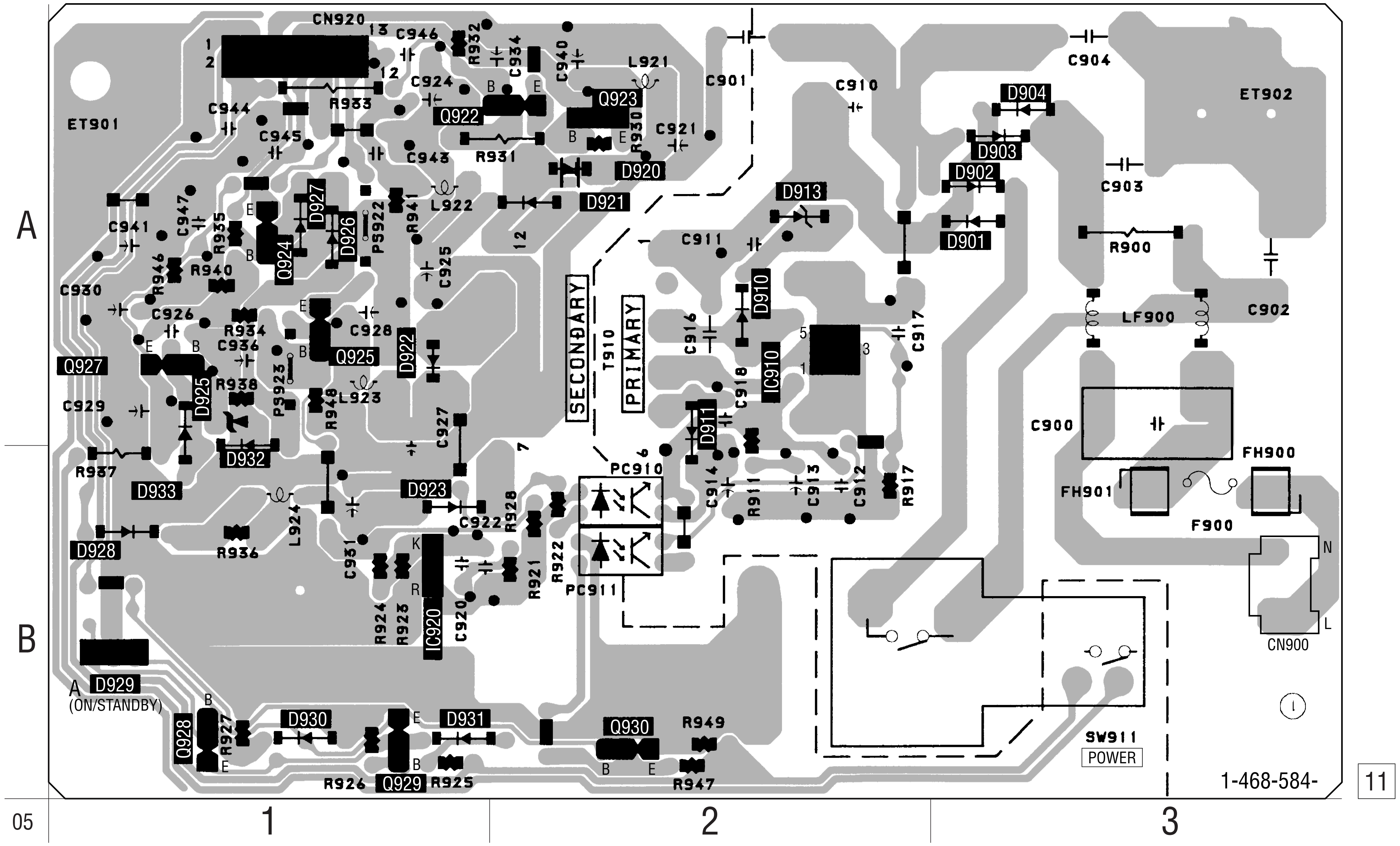
TOP-244U (SWITCHING REGULATOR) PRINTED WIRINNG BOARD
– Ref. No.: TOP-244U board; 6,000 series –
– US, CND –

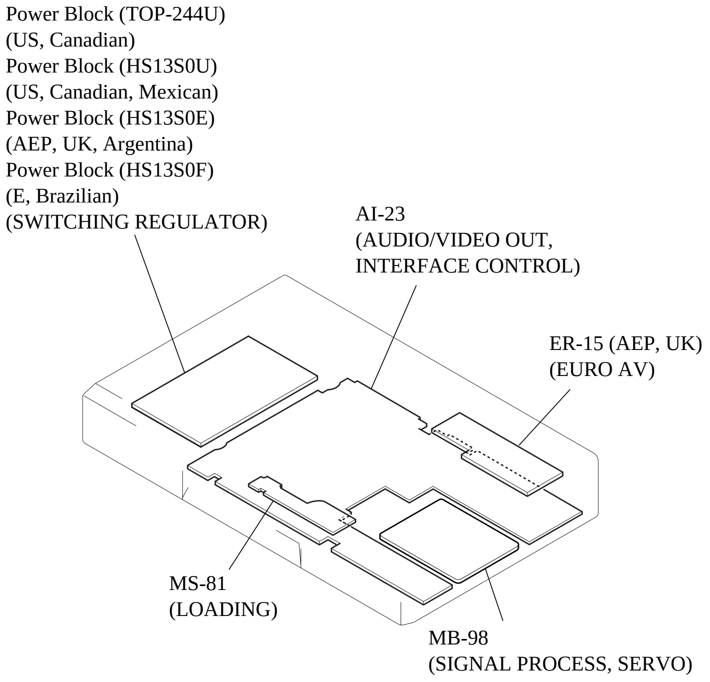
There are a few cases that the part isn't mounted in this model is printed on this diagram.

TOP-244U BOARD

CN900	B-3
CN920	A-1
D901	A-3
D902	A-3
D903	A-3
D904	A-3
D910	A-2
D911	A-2
D913	A-2
D920	A-2
D921	A-2
D922	A-1
D923	B-1
D925	A-1
D926	A-1
D927	A-1
D928	B-1
D929	B-1
D930	B-1
D931	B-1
D932	B-1
D933	A-1
IC910	A-2
IC920	B-1
Q922	A-2
Q923	A-2
Q924	A-1
Q925	A-1
Q927	A-1
Q928	B-1
Q929	B-1
Q930	B-2

TOP-244U BOARD

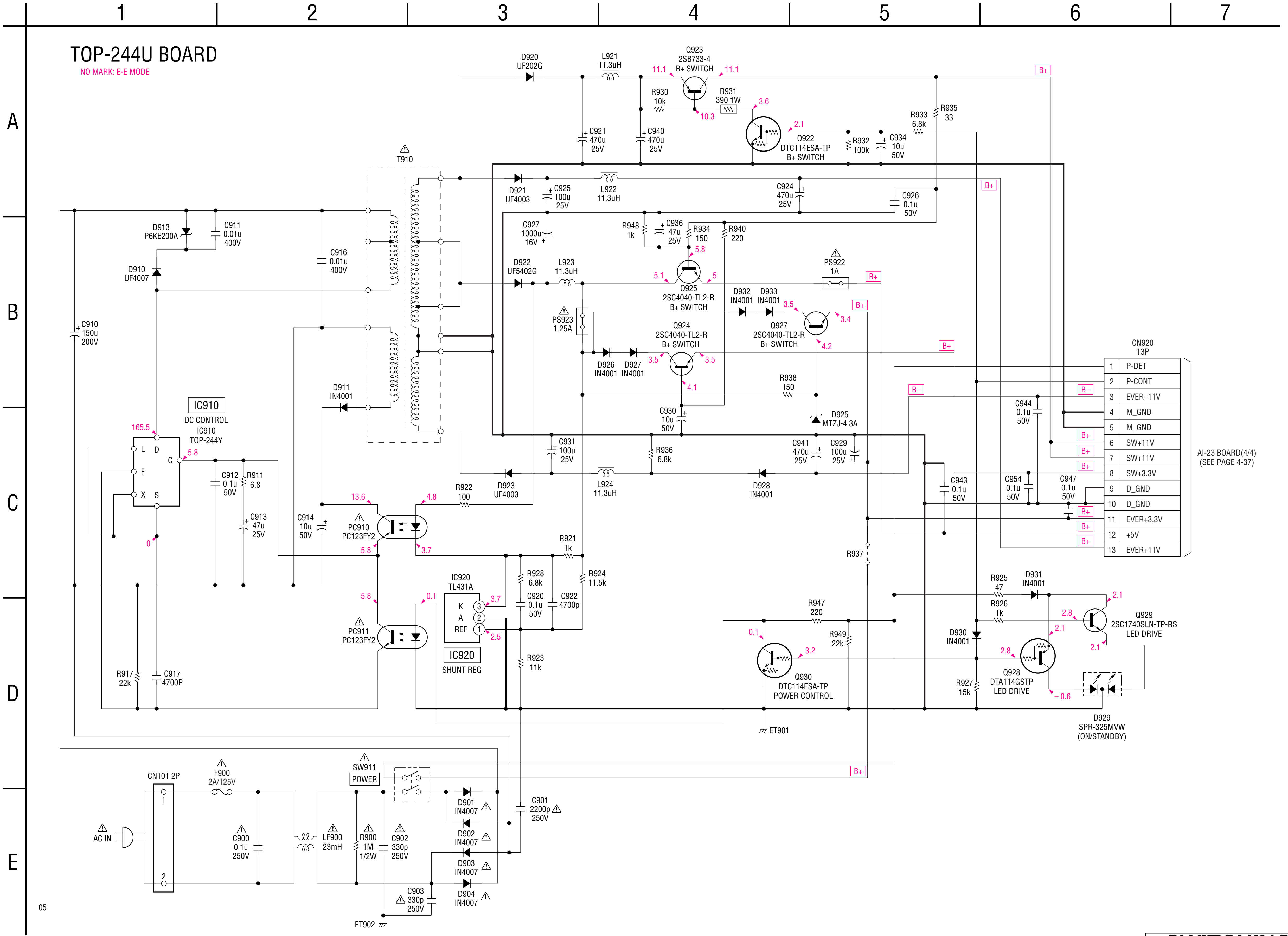




SWITCHING REGULATOR
TOP-244U

TOP-244U (SWITCHING REGULATOR) SCHEMATIC DIAGRAM
– Ref. No.: TOP-244U board; 6,000 series –
– US, CND –

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



SWITCHING REGULATOR
TOP-244U

SECTION 5
IC PIN FUNCTION DESCRIPTION

5-1. SYSTEM CONTROL PIN FUNCTION (MB-98 BOARD IC103)

Pin No.	Pin name	I/O	Function
1-5	HA17-HA21	O	Address bus A17-A21
6	HA22	-	Not used
7	WP	O	Write control signal output to EEPROM
8	TRM–/XKRCS	-	Not used
9	AVCC	-	Power supply
10	AVRH	-	Reference power supply (+3.3 V)
11	AVSS	-	Ground
12	AN0	I	Set of mode 0
13	AN1	I	Set of mode 1
14	AN2	I	Set of mode 2
15	AN3	I	Set of mode 3
16	INT0	I	Input of interrupt from AV DEC
17	INT1	I	Input of interrupt from ARP
18	INT2	I	Input of interrupt from servo DSP
19	INT3	-	Not used
20	INT4	I	Input of interrupt from IF CON
21	INT5	I	Input of interrupt from audio DSP
22	INT6	I	Input of interrupt from audio DSP
23	INT7	-	Not used
24	VCC	-	Power supply
25	SI0	I	Serial data input from IF CON
26	SO0	O	Serial data output to IF CON
27	SC0	O	Serial clock output to IF CON
28	SI1	I	Serial bus 1 (for data input)
29	SO1	O	Serial bus 1 (for data output)
30	SC1	O	Serial clock output
31	SI2	I	Serial bus 2 (for data input)
32	SO2	O	Serial bus 2 (for data output)
33	DSENS	-	Not used
34	VSS	-	Ground
35	XRST	O	System reset signal output
36	XARPRST	O	Reset signal output for ARP
37	RGBSEL/MICMUTE	O	RGB signal select signal output/Mic mute signal output
38	SDA	I/O	I2C bus seria data input/output
39	SCL	O	I2C bus serial clock output
40	TRM+/XKRRST	-	Not used
41	EUROV/Y/CLAPSW1	O	EURO V/Y select signal output/Mute signal output to video buffer
42	DISCEXT/CLPSW0	O	Line input select signal output (DISC: “H”, EXT: “ L”)
43	MD0	I	Input of mode select 0 (fixed at “ H”)
44	MD1	I	Input of mode select 1 (fixed at “ L”)
45	MD2	I	Input of mode select 2 (fixed at “ L”)
46	DREQ0	I	Input of DMA-REQ 0 from AV DEC
47	DACK0	O	Output of DMA-ACK 0 to AV DEC
48	XDRVMUTE	O	Drive mute signal output
49	DREQ1	I	Input of DMA-REQ 1 from AV DEC
50	DACK1	O	Output of DMA-ACK 1 to AV DEC
51	XIFCS	O	Chip select signal to IF CON
52	VSS	-	Ground
53	X1	O	Clock output (16.5 MHz)
54	X0	I	Clock input (16.5 MHz)
55	VCC	-	Power supply
56	CKSW1	I	Chuck sensor input
57	OCSW1	I	Tray sensor input
58	CS0X	O	External ROM chip select signal output
59	CS1X	-	Not used
60	CS2X	O	Chip select signal output (for AV DEC)
61	CS3X	O	Chip select signal output (for AV DEC)
62	CS4X	O	Chip select signal output (for ARP)
63	CS5X	O	Chip select signal output (for servo DSP)
64	C	-	Capacitor (0.1uF) connect between ground
65	CS6X	-	Not used
66	CS7X	-	Not used
67	XWAIT	I	Wait signal input
68	BGRNTX	-	Test terminal (fixed at “H”)
69	BRQ	-	Test terminal
70	XRD	O	Read enable signal output

Pin No.	Pin name	I/O	Function
71	XWRH	O	High byte write enable signal output (16 bit and 8 bit)
72	XWRL	-	Not used
73	NMIX	-	Not used (fixed at “H”)
74	HSTX	-	Not used (fixed at “H”)
75	VSS	-	Ground
76	XFRRST	I	Reset signal input from IF CON
77	CPUCK	O	CPU clock signal output
78	OCSW2	-	Not used
79	XDACS	O	Chip select signal output to DAC (2ch, 6ch)
80	VESCS/X39CS	O	Chip select signal output to DSP
81	48/44.1K	O	PLL FS control signal output
82	WIDE	O	WIDE select signal output
83	MAMUTE	O	Audio mute signal output
84	XLDON	O	LD control signal output
85-92	HD0-HD7	I/O	Data bus D0-D7 (16 bit only)
93-100	HD8-HD15	I/O	Data bus D8-D15 (16 bit) , D0-D7 (8 bit)
101	VSS	-	Ground
102-109	HA0-HA7	O	Address bus A00-A07
110	VCC	-	Power supply
111-118	HA8-HA15	O	Address bus A08-A15
119	VSS	-	Ground
120	HA16	O	Address bus A16

SECTION 6
TEST MODE

6-1. GENERAL DESCRIPTION

The Test Mode allows you to make diagnosis and adjustment easily using the remote commander and monitor TV. The instructions, diagnostic results, etc. are given on the on-screen display (OSD).

6-2. STARTING TEST MODE

Press the [TITLE], [CLEAR], [POWER] keys on the remote commander in this order with the power of main unit in OFF status, and the Test Mode starts, then "DIAG START" will be displayed on the fluorescent display tube and the menu shown below will be displayed on the TV screen. At the bottom of menu screen, the model name and revision number are displayed. Last Off at the lower right of screen indicates the information code concerning the last power off.
To execute each function, select the desired menu and press its number on the remote commander.
To exit from the Test Mode, press the [POWER] key.

```
         Test Mode Menu

0. Syscon Diagnosis
1. Drive Auto Adjustment
2. Drive Manual Operation
3. Mecha Aging
4. Emergency History
5. Version Information
6. Video Level Adjustment
                Exit: POWER Key
_
Model  : DPX-14xxxx
Revision : 1.xxxx  Last Off: xx
```

Power Off Information Code List

00 : Primary Power Off
01 : Power Off Request from SYSTEM CONTROL
02 : Power Off by Emergency Power Off Command from SYSTEM CONTROL
(if information is sent from SYSTEM CONTROL)
03 : IF CON Judged that SYSTEM CONTROL is Faulty
04 : Power Off from Diagnosis Mode of IF CON
05 : Forced Power Off by the User
06 : Power Off by Power Supply Voltage Monitor

6-3. SYSCON DIAGNOSIS

The same contents as board detail check by serial interface can be checked from the remote commander.
On the Test Mode Menu screen, press [0] key on the remote commander, and the following check menu will be displayed.

```
    ### Syscon Diagnosis ###
           Check Menu
0. Quit
1. All
2. Version
3. Peripheral
4. Servo
5. Supply
6. AV Decoder
7. Video
8. Audio
_
```

0. Quit

Quit the Syscon Diagnosis and return to the Test Mode Menu.

1. All

All items continuous check
This menu checks all diagnostic items continuously. Normally, all items are checked successively one after another automatically unless an error is found, but at a certain item that requires judgment through a visual check to the result, the following screen is displayed for the key entry.

```
    ### Syscon Diagnosis ###

         Diag All Check
         No. 2 Version

 2-3. ROM Check Sum
Check Sum = xxxx


Press NEXT Key to Continue
Press PREV Key to Repeat
_
```

For the ROM Check, the check sum calculated by the Syscon is output, and therefore you must compare it with the specified value for confirmation.
Following the message, press [NEXT] key to go to the next item, or [PREV] key to repeat the same check again. To quit the diagnosis and return to the Check Menu screen, press [STOP] or [ENTER] key. If an error occurred, the diagnosis is suspended and the error code is displayed as shown below.

```
    ### Syscon Diagnosis ###



 3-3. EEPROM Check
Error 03: EEPROM Write/Reed N
Address    : 00000001
Write Data : 2492
Read Data  : 2490
Press NEXT Key to Continue
Press PREV Key to Repeat
_
```

Press [STOP] key to quit the diagnosis, or [PREV] key to repeat the same item where an error occurred, or [NEXT] key to continue the check from the item next to faulty item.

Submenu

Selecting 2 and subsequent items calls the submenu screen of each item.
For example, if "5. Supply" is selected, the following submenu will be displayed.

```
    ### Syscon Diagnosis ###
           Check Menu
          No. 5 Supply
0. Quit
1. All
2. ARP Register Check
3. ARP to RAM Data Bus
4. ARP to RAM Address Bus
5. ARP RAM Check
_
```

0. Quit

Quit the submenu and return to the main menu.

1. All

All submenu items continuous check.
This menu checks 2 and subsequent items successively. At the item where visual check is required for judgment or an error occurred, the checking is suspended and the message is output for key entry. Normally, all items are checked successively one after another automatically unless an error is found.
Selecting 2 and subsequent items executes respective menus and outputs the results.
For the contents of each submenu, see "General Description of Checking Method" and "Check Items List".

General Description of Checking Method

2. Version

(2-2) Revision
ROM revision number is displayed.
Error: Not detected.
The revision number defined in the source file of ROM (IC107) is displayed with four digits.

(2-3) ROM Check Sum
Check sum is calculated.
Error: Not detected.
8-bit data are added up to the ROM (IC107) address 0x000F0000 to 0x002EFFFF, and the result is displayed with 4-digit hexadecimal number. Error is not detected. Compare the result with the specified value.

(2-4) Model Type
Model code is displayed.
Error: Not detected.
The model code read from the EEPROM is displayed with 2-digit hexadecimal number.

	Model Type	
US, CND	1	0
AR, E, MX	1	2
AEP (DPX1411BM, DPX1411HM), UK	1	3
AEP (DPX1412BM, DPX1412HM)	1	4
BR	1	6

- Abbreviation
  AR : Argentina
  BR : Brazilian
  CND : Canadian
  MX : Mexican

- Description about model name
  DPX14xxBM
  (B) — Color of set
  B : Black
  H : Titanium gray

(2-5) Region
Region code is displayed.
Error: Not detected.
The region code determined from the model code is displayed.

(2-6) AD 3 PORT Check
AD 3 PORT status is displayed.
Error: Not detected.
Which status, High (Pull Up), NC (Non Connect), or Low (Pull Down), the AD 3 PORT is placed in now is checked.

3. Peripheral

(3-2) Gate Array Check
Data write → read, and accord check
Error 02: Gate array write/read discord
Data of 0x00 to 0xFF is written sequentially to the address 0xF and then read for checking.

(3-3) EEPROM Check
Data write → read, and accord check
Error 03: EEPROM write/read discord
0x9249, 0x2942 and 0x4294 are written to the address 0x00 to 0xFF of the EEPROM and then read for checking. Before writing, the data are saved, then after checking, they are written to restore the contents of EEPROM.

4. Servo

(4-2) Servo DSP Check
Data write → read, and accord check
Error 12: Read data discord
0x9249, 0x2942 and 0x4294 are written to the RAM address 0x602 of the Servo DSP and then read for checking. Also, OPT type "1 LASER" or "2 LASER" is displayed.

(4-3) DSP Driver Test
Test signal data → DSP Driver
Error: Not detected.

Caution: Do not perform this checking with the mechanical deck connected.
The maximum voltage is applied to the Servo Driver IC (IC401). If the mechanical deck is connected, it will be destroyed immediately. Following the output message, disconnect the mechanical deck, then enter the specified 4- or 5-digit value from the commander, and press the ENTER key. The test is conducted only if the entered value accords. To exit the test, check the output level, then press NEXT key.
This check is not conducted, but skipped in "All" menu item.

Supplement: How to disconnect mechanical deck
Disconnect flexible flat cables connected to the CN201 and CN202 of MB-98 board. Also, disconnect flat cable from the CN402.

5. Supply

(5-2) ARP Register Check
Data write → read, and accord check
Error 08: ARP register write, and read data discord
Data 0x00 to 0xFF is written sequentially to the ARP TMAX register (address 0xC6) and then read for checking.

(5-3) ARP to RAM Data Bus
Data write → read, and accord check
Error 09: ARP ←→ RAM data bus error
Data 0x0001 to 0x8000 where one bit each is set to 1 are written to the address 0 of RAM (IC303) connected to the ARP (IC302) through the bus, then they are read and checked. In case of discord, written bit pattern and read data are displayed. If data where multiple bits are 1 are read, the bits concerned may touch each other. Further, if data where certain bit is always 1 or 0 regardless of written data, the line could be disconnected or shorted.

(5-4) ARP to RAM Address Bus
Data write → other address read discord check
Error 10: ARP ←→ RAM address bus error
Caution: Address and data display in case of an error is different from the display of other diagnosis (described later).
Before starting the test, all addresses of RAM (IC303) are cleared to 0x0000.
First, 0xA55A is written to the address 0x00000, and the address data are read and checked from addresses 0x00001 to 0x80000 while shifting 1 bit each. Next, the data at that address is cleared, and it is written to the address 0x00001, and read and checked in the same manner. This check is repeated up to the address 0x80000 while shifting the address data by 1 bit each.
If data other than 0 is read at the addresses except written address, an error is given because all addresses were already cleared to 0. In this check, the error display pattern is different from that of other diagnosis; read data, written address, and read address are displayed in this order. However, the message uses same template, and accordingly exchange Address and Data when reading. The following display, for example,

```
    ### Syscon Diagnosis ###



 5-4. ARP to RAM Address Bus
Error 10: ARP - RAM Address B
Address    : 0000A55A
Write Data : 00000000
Read Data  : 00080000
Press NEXT Key to Continue
Press PREV Key to Repeat
_
```

shows the data 0xA55A was read from address 0x00080000 though it was written to the address 0x00000000. This implies that these addresses are in the form of shadow. Also, if the read data is not 0xA55A, another error will be present.

(5-5) ARP RAM Check
Data write → read, and accord check
Error 11: ARP RAM read data discord
The program code data stored in ROM are copied to all areas of RAM (IC303) connected to the ARP (IC302) through the bus, then they are read and checked if they accord. If the detail check was selected initially, the data are written to all areas and read, then the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 11, and the test is suspended.

6. AV Decoder

(6-2) 1930 RAM
Data write → read, and accord check
Error 13: AVD RAM read data discord
The program code data stored in ROM (IC107) are copied to all areas of RAM (IC504, IC505) connected to the AVD (IC503) through the bus, then they are read and checked if they accord. Further, the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 13, and the test is suspended.
During the test, OSD display becomes blank as the OSD area is also checked.

(6-3) 1930 SP
ROM → AVD RAM → Video OUT
Error: Not detected.
The data including sub picture streams in ROM (IC107) are transferred to the RAM (IC504, IC505) in AVD (IC503), and output as video signals from the AVD (IC503).
Though OSD display becomes blank, the output of video signals continues until the key is pressed.
They are output from all video terminals (Composite, Y/C, Component) except EURO AV terminal.

7. Video

(7-2) Color Bar
AVD color bar command write → Video OUT
Error: Not detected.
The command is transferred to the AVD, and the color bar signals are output from video terminals.
They are output from all video terminals (Composite, Y/C, Component) except EURO AV terminal.

(7-3) Composite Out (AEP, UK Model)
EURO-AV Composite video output check
AVD color bar command write → Video (EURO-AV Composite) OUT
Error: Not detected.
With the Component of video output turned off, the color bar signals are output from the EURO-AV terminal.

(7-4) Y/C Out (AEP, UK Model)
EURO-AV Y/C video output check
AVD color bar command write → Video (EURO-AV Y/C) OUT
Error: Not detected.
With the Y/C of video output turned on, the color bar signals are output from the EURO-AV terminal.

(7-5) RGB Out (AEP, UK Model)
EURO-AV RGB video output check
AVD color bar command write → Video (EURO-AV RGB) OUT
Error: Not detected.
With the RGB of video output turned on, the color bar signals are output from the EURO-AV terminal.

(7-6) Component Out (AEP, UK Model)
EURO-AV Component video output check
AVD color bar command write → Video (EURO-AV Component) OUT
Error: Not detected.
With the Component of video output turned on, the color bar signals are output from the EURO-AV terminal.

(7-7) Euro AV Through (AEP, UK Model)
Euro-AV Through Out ON/OFF check.
AV through out is turned on, check video and audio signal pass through from Euro-AV2 to Euro-AV1.
Error: Not detected.

8. Audio

(8-2) ARP → 1930
Error 14 : ARP → 1930 video NG
15 : ARP → 1930 audio NG

(8-3) Test Tone
A pink noise signal is output from the AVD (IC503) through optical coaxial digital terminal and analog audio terminal.
Error: Not detected.
After turning on all outputs, each time the [NEXT] key is pressed, the output channel is switched for individual channel checking.
All channels → 2ch Left → 2ch Right → Front Left → Front Right → Rear Left → Rear Right → Center → Sub Woofer are checked in this order.
Caution: Sub Woofer is checked only for low-frequency components, and no sound will be heard unless a proper super woofer is connected.

Check Items List

2) Version
(2-2) Revision
(2-3) ROM Check Sum
(2-4) Model Type
(2-5) Region

3) Peripheral
(3-2) Gate Array Check
(3-3) EEPROM Check

4) Servo
(4-2) Servo DSP Check
(4-3) DSP Driver Test

5) Supply
(5-2) ARP Register Check
(5-3) ARP to RAM Data Bus
(5-4) ARP to RAM Address Bus
(5-5) ARP RAM Check

6) AV Decoder
(6-2) 1930 RAM
(6-3) 1930 SP

7) Video
(7-2) Color Bar
(7-3) Composite Out (AEP, UK Model)
(7-4) Y/C Out (AEP, UK Model)
(7-5) RGB Out (AEP, UK Model)
(7-6) Component Out (AEP, UK Model)
(7-7) Euro AV Through (AEP, UK Model)

8) Audio
(8-2) ARP → 1930
(8-3) Test Tone

Error Codes List

00: Error not detected
01: RAM write/read data discord
02: Gate array NG
03: EEPROM NG
04: Flash memory clear error
05: Flash memory write error
06: Flash memory read data discord
07: 2725 read data discord
08: ARP register read data discord
09: ARP ←→ RAM data bus error
10: ARP ←→ RAM address bus error
11: ARP RAM read data discord
12: Servo DSP NG
13: 1930 SDRAM NG
14: ARP → 1930 video NG
15: ARP → 1930 audio NG
16: 1910 UCODE download NG
17: System call error (function not supported)
18: System call error (parameter error)
19: System call error (illegal ID number)
20: System call error (time out)
21: NAND Flash faulty blocks exceed 10
90: Error occurred
91: User verification NG
92: Diagnosis cancelled

6-4. DRIVE AUTO ADJUSTMENT

On the Test Mode Menu screen, press [1] key on the remote commander, and the drive auto adjustment menu will be displayed.

```
   ## Drive Auto Adjustment ##

         Adjustment Menu

0. ALL
1. DVD-SL
2. CD
3. DVD-DL
4. LCD



                  Exit: RETURN
```

Normally, [0] is selected to adjust DVD (single layer), CD, DVD (dual layer), and LCD (SACD) in this order. But, individual items can be adjusted for the case where adjustment is suspended due to an error. In this mode, the adjustment can be made easily through the operation following the message displayed on the screen. Which disc is currently adjusted is displayed on the fluorescent display tube.
The disc used for adjustment must be the one specified for adjustment.

0. ALL

You will be asked if EEPROM data are initialized or not, and for this prompt, select [0] and press the [ENTER] key. First , the servo setting data in EEPROM, Emergency History and Hour Meter are cleared to initialize. Then, 1. DVD-SL disc, 2. CD disc, 3. DVD-DL disc, and 4. LCD disc (SACD disc) are adjusted in this order. Each time one disc was adjusted, it is ejected, and therefore exchange the disc following the message. Though the message to confirm whether the discs is to be adjusted is not displayed except for LCD disk (SACD disk), you can exit the adjustment by pressing the [STOP] button. In adjusting each disc, the mirror time is measured to check the disk type. In the auto adjustment, whether the disc type is correct is not checked unlike conventional models, and accordingly, take care not to insert a different type of disc.

1. DVD-SL (single layer)

Select [1], insert DVD single layer disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

DVD Single Layer Disc Adjustment Steps

1. SLED TILT Reset
2. Disc Check Memory SL
3. Set Disc Type SL
4. Spdl Start
5. Wait 1 sec
6. LD ON
7. Focus Error Check
8. Focus ON 0
9. Auto Track Offset Adjust L0
10. Trv Level Check
11. Tracking ON
12. Wait 100 msec
13. CLVA ON
14. Wait 500 msec
15. Sled ON
16. Auto Loop Filter Offset Adjust
17. Auto Focus Gain Adjust L0
18. Auto Focus Balance Adjust L0
19. EQ Boost Adjust
20. Auto Loop Filter Offset Adjust
21. RF Level Measure
22. Jitter Disp ON
23. Jitter Memory
24. Jitter Disp OFF
25. Eep Copy Loop Filter Offset
26. All Servo Stop

2. CD

Select [2], insert CD disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

CD Adjustment Steps

1. Sled Tilt Reset
2. Disc Check Memory CD
3. Set Disc Type CD
4. Spdl Start
5. Wait 1 sec
6. LD ON
7. Focus Error Check
8. Fcs ON 1
9. Auto Track Offset Adjust L0
10. Trv Level Check
11. Tracking ON
12. Wait 100 msec
13. CLVA ON
14. Wait 500 msec
15. Sled ON
16. Auto Loop Filter Offset Adjust
17. Auto Focus Gain Adjust L0
18. Auto Focus Balance Adjust L0
19. Eq Boost Adjust
20. Auto Loop Filter Offset Adjust
21. Auto Track Gain Adjust
22. RF Level Measure
23. Jitter Disp ON
24. Jitter Memory
25. Jitter Disp OFF
26. All Servo Stop

3. DVD-DL (dual layer)

Select [3], insert DVD dual layer disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

DVD Dual Layer Disc Adjustment Steps

1. Sled Tilt Reset
2. Disc Check Memory DL
3. Set Disc Type DL

Layer 1 Adjust

4. Spdl Start (Wait 1 sec)
5. LD ON
6. Fcs ON 1
7. Auto Track Offset Adjust L1
8. Tracking ON
9. Wait 100 msec
10. Clva ON (Wait 500 msec)
11. Sled ON
12. Auto Focus Gain Adjust L1
13. Auto Focus Balance Adjust L1
14. Eq Boost Adjust L1
15. Auto Track Gain Adjust L1
16. Jitter Disp ON
17. Jitter Memory
18. Jitter Disp Off

Layer 0 Adjust

19. Focus Jump (L1 → L0)
20. Auto Track Offset Adjust L0
21. Tracking ON (Wait 100 msec)
22. Clva ON (Wait 500 msec)
23. Sled ON
24. Auto Focus Gain Adjust L0
25. Auto Focus Balance Adjust L0
26. Eq Boost Adjust L0
27. Auto Track Gain Adjust L0
28. Jitter Disp ON
29. Jitter Memory
30. Jitter Disp OFF
31. All Servo Stop

4. LCD

This model does not adjust it because the adjusted data of CD are reflected.

6-5. DRIVE MANUAL OPERATION

On the Test Mode Menu screen, select [2], and the manual operation menu will be displayed. For the manual operation, each servo on/off control and adjustment can be executed manually.

```
  ## Drive Manual Operation ##

         Operation Menu
1. Disc type
2. Servo Control
3. Track/Layer Jump
4. Manual Adjustment
5. Auto Adjustment
6. Memory Check

0. Disc Check Memory

                Exit: RETURN
```

In using the manual operation menu, take care of the following points. These commands do not provide protection, thus requiring correct operation. The sector address or time code field is displayed when a disc is loaded.

1. Set correctly the disc type to be used on the Disc Type screen.
   The disc type must be set after a disc was loaded.
   The set disc type is cleared when the tray is opened.
2. After power ON, if the Drive Manual Operation was selected, first perform "Reset SLED TILT" by opening 1. Disc Type screen.
3. In case of an alarm, immediately press the [STOP] button to stop the servo operation, and turn the power OFF.

Basic operation (controllable from front panel or remote commander)

[POWER]	Power OFF
[STOP]	Servo stop
[OPEN/CLOSE]	Stop+Eject/Loading
[RETURN]	Return to Operation Menu or Test Mode Menu
[NEXT], [PREV]	Transition between sub modes of menu
[1] to [9], [0]	Selection of menu items
Cursor UP/DOWN	Increase/Decrease in manually adjusted value

0. Disc Check Memory

```
          Disc Check



1. SL Disc Check
2. CD Disc Check
3. DL Disc Check




0. Reset SLED TILT
```

On this screen, the mirror time is measured and written to the EEPROM to check the disc type. First, set a DVD SL disc and press [1], then set a CD disc and press [2], and finally set a DVD DL disc and press [3]. The measured mirror time is displayed respectively.
The adjustment must be executed more than once after default data were written.
Reference value for DVD is from 10 to 20, and for CD, from 28 to 4F. Check that the value of CD is larger than that of DVD. When those values are beyond a range perform this adjustment again.
From this screen, you can go to another mode by pressing [NEXT] or [PREV] key, but you cannot enter this mode from another mode. You can enter this mode from the Operation Menu screen only.

1. Disc Type

```
           Disc Type
1. Disc Type Auto Check
2. DVD SL   12 cm
3. DVD DL   12 cm
4. CD       12 cm
5. LCD      12 cm
6. DVD SL   8 cm
7. DVD DL   8 cm
8. CD       8 cm
9. LCD      8 cm
0. Reset SLED TILT
                        EMG. 00
```

On this screen, select the disc type. To select the disc type, press the number of the loaded disc. The selected disc type is displayed at the bottom. Selecting [1] automatically selects and displays the disc type. In case of wrong display, retry "Disc Check Memory".
Also, opening the tray causes the set disc type to be cleared. In this case, set the disc type again after loading.
In performing manual operation, the disc type must be set.
Once the disc type has been selected, the sector address or time code display field will appear as shown below. These values are displayed when PLL is locked.

```
           Disc Type
1. Disc Type Auto Check
2. DVD SL   12 cm
3. DVD DL   12 cm
4. CD       12 cm
5. LCD      12 cm
6. DVD SL   8 cm
7. DVD DL   8 cm
8. CD       8 cm
9. LCD      8 cm
0. Reset SLED TILT
        SA.------ SI.-- EMG. 00
DVD SL 12 cm
```

Display when DVD SL 12cm disc was selected

```
            Disc Type
1. Disc Type Auto Check
2. DVD SL   12 cm
3. DVD DL   12 cm
4. CD       12cm
5. LCD      12 cm
6. DVD SL   8 cm
7. DVD DL   8 cm
8. CD       8 cm
9. LCD      8 cm
0. Reset SLED TILT
         TC.---:---:--- EMG. 00
CD   12 cm
```

Display when CD 12cm disc was selected

[0]	Reset SLED TILT	Reset the Sled and Tilt to initial position.
[1]	Disc Type Check	Judge automatically the loaded disc. As the judged result is displayed at the bottom of screen, make sure that it is correct. If Disc Check Memory menu has not been executed after EEPROM default setting, the disc type cannot be judged. In this case, return to the initial menu and make a check for three types of discs (SL, DL, CD).
[2] to [9]		Select the loaded disc. The adjusted value is written to the address of selected disc. No further entry is necessary if [1] was selected.

2. Servo Control

```
          Servo Control
1. LD        Off R. Sled FWD
2. SP        Off L. Sled REV
3. Focus     Off
4. TRK.      Off
5. Sled      Off
6. CLVA      Off
7. FCS. Srch Off


0. Reset SLED TILT
        SA.------ SI.-- EMG. 00
DVD SL 12 cm
```

On this screen, the servo on/off control necessary for replay is executed. Normally, turn on each servo from 1 sequentially and when CLVA is turned on, the usual trace mode becomes active. In the trace mode, DVD sector address or CD time code is displayed. This is not displayed where the spindle is not locked.
The spindle could run overriding the control if the spindle system is faulty or RF is not present. In such a case, do not operate CLVA.

[0]	Reset SLED TILT	Reset the Sled and Tilt to initial position.
[1]	LD	Turn ON/OFF the laser.
[2]	SP	Turn ON/OFF the spindle.
[3]	Focus	Search the focus and turn on the focus.
[4]	TRK	Turn ON/OFF the tracking servo.
[5]	Sled	Turn ON/OFF the sled servo.
[6]	CLVA	Turn ON/OFF normal servo of spindle servo.
[7]	FCS. Srch	Apply same voltage as that of focus search to the focus drive to check the focus drive system.
[→]	Sled FWD	Move the sled outward. Perform this operation with the tracking servo turned off.
[←]	Sled REV	Move the sled inward. Perform this operation with the tracking servo turned off.

3. Track/Layer Jump

```
      Tracking/Layer Jump
1. 1Tj FWD    R. Fj (L1 → L0)
2. 1Tj REV    L. Fj (L0 → L1)
3. 2Tj FWD    U. Lj (L1 → L0)
4. 2Tj REV    D. Lj (L0 → L1)
5. NTj FWD
6. NTj REV
7. 500Tj FWD
8. 500Tj REV
9. 10k/20k FWD
0. 10k/20k REV
        SA.------ SI.-- EMG. 00
DVD SL 12 cm
```

On this screen, track jump, etc. can be performed. Only for the DVD-DL, the focus jump and layer jump are displayed in the right field.

[1]	1Tj FWD	1-track jump forward.
[2]	1Tj REV	1-track jump reverse.
[3]	2Tj FWD	2-track jump forward.
[4]	2Tj REV	2-track jump reverse.
[5]	NTj FWD	N-track jump forward.
[6]	NTj REV	N-track jump reverse.
[7]	500Tj FWD	Fine search forward.
[8]	500Tj REV	Fine search reverse.
[9]	10k/20k FWD	Direct search forward.
[0]	10k/20k REV	Direct search reverse.

– The following commands are valid for DVD-DL disc only –

[→]	Fj (L1 → L0)	Focus jump forward. (Trk/Sled Servo OFF)
[←]	Fj (L0 → L1)	Focus jump reverse. (Trk/Sled Servo OFF)
[↑]	Lj (L1 → L0)	Layer jump forward. (Trk/Sled Servo ON)
[↓]	Lj (L0 → L1)	Layer jump reverse. (Trk/Sled Servo ON)

4. Manual Adjustment

```
       Manual Adjustment
1. TRK. Offset
2. Focus Gain
3. TRK. Gain
4. Focus Offset
5. Focus Balance
6. L.F. Offset
7. EQ BOOST
8. GD ADJ
Adjustment : Up/Down
                     Jitter 1D
        SA.------ SI.-- EMG. 00
DVD SL 12 cm
```

On this screen, each item can be adjusted manually. Select the desired number [1] to [8] from the remote commander, and current setting for the selected item will be displayed, then increase or decrease numeric value with [↑] key or [↓] key. This value is stored in the EEPROM. If CLV has been applied, the jitter is displayed for reference for the adjustment.

[1]	TRK. Offset	Adjusts tracking offset.
[2]	Focus Gain	Adjusts focus gain.
[3]	TRK. Gain	Adjusts track gain.
[4]	Focus Offset	Adjusts focus offset.
[5]	Focus Balance	Adjusts focus balance.
[6]	L.F. Offset	Adjusts loop filter offset.
[7]	EQ BOOST	
[8]	GD ADJ	

5. Auto Adjustment

```
        Auto Adjustment
1. Auto TRK. Offset
2. Auto Focus Balance
3. Auto Focus Offset
4. Auto Focus Gain
5. Auto TRK. Gain
6. Auto EQ
7. Auto L.F. Offset
8. Auto Group Delay


        SA.------ SI.-- EMG. 00
DVD SL 12 cm
```

On this screen, each item can be adjusted automatically. Select the desired number [1] to [8] from the remote commander, and selected item is adjusted automatically.

[1]	Auto TRK. Offset	Adjusts tracking offset.
[2]	Auto Focus Balance	Adjusts focus balance.
[3]	Auto Focus Offset	Adjusts focus offset.
[4]	Auto Focus Gain	Adjusts focus gain.
[5]	Auto TRK. Gain	Adjusts track gain.
[6]	Auto EQ	
[7]	Auto L.F. Offset	Adjusts loop filter offset.
[8]	Auto Group Delay	

6. Memory Check

```
EEPROM DATA 1          -- DL --
             CD LCD   SL  L0  L1
Focus Gain    xx xx    xx  xx  xx
TRK. Gain     xx xx    xx  xx  xx
FCS Balance   xx xx    xx  xx  xx
Focus Bias    xx xx    xx  xx  xx
TRV. Offset   xx xx    xx  xx  xx
L.F. Offset   xx xx    xx  xx  xx
EQ Boost      xx xx    xx  xx  xx
Mirror Time   xx --    xx  xx
_
DOWN : Next Data
CLEAR: Default Set    page. 1/2
```

```
EEPROM DATA 2          -- DL --
             CD LCD   SL  L0  L1
RF Jitter     xx --    xx  xx  xx
RF Level      xx --    xx  --  --
FE Level      xx --    xx  --  --
FE Balance    xx --    xx  --  --
TRV. Level    xx --    xx  --  --
Analog FRSW   xx xx    xx  xx  xx
PLL Dac Gain  xx xx    xx  xx  xx

_
UP : Prev Data
CLEAR: Default Set    page. 2/2
```

On this screen, current servo adjusted data stored in the EEPROM are displayed. The adjusted data are initialized by pressing the [CLEAR] key, but be careful that they are not recoverable after initialization.
Before clearing the adjusted data, make a note of the set data. This screen will also appear if [0] All is selected in the Drive Auto Adjustment. In this case, default setting cannot be made.
For reference, the drive has been designed so that the gain center value is 20 and offset value is 80. Other values will be in a range of 10 to 80. If extreme value such as 00 or FF is set, adjustment will be faulty. In such a case, check for disc scratch or cable disconnection, then perform adjustment again.

6-6. MECHA AGING

```
      ### Mecha Aging ###



Press OPEN key




Abort: STOP key

```

On the Test Mode Menu screen, selecting [3] executes the aging of mechanism. First, open the tray and load a disc. Press the [PLAY] key, and the aging will start. When the tray is closed, the disc type and size are judged and displayed. During aging, the repeat cycle is displayed. Aging can be aborted at any time by pressing the [STOP] key. After the operation has stopped, unload the disc and press again the [STOP] key or the [RETURN] key to return to the Test Mode Menu.

6-7. EMERGENCY HISTORY

```
      ### MEG. History ###

Laser Hours     CD   xxxxxxxh
                DVD  xxxxxxxh

1. 00 00 00 00  00 00 00 00
   00 00 00 00  00 00 00 00

2. 00 00 00 00  00 00 00 00
   00 00 00 00  00 00 00 00

Select: 1 – 9   Scroll: UP/DOWN
(1: Last EMG.)  Exit: Return
```

On the Test Mode Menu screen, selecting [4] displays the information such as servo emergency history. The history information from last 1 up to 10 can be scrolled with [↑] key or [↓] key. Also, specific information can be displayed by directly entering that number with ten keys.

The upper two lines display the laser ON total hours. Data below minutes are omitted.

Clearing History Information

Clearing laser hours

◎ Press [DISPLAY] and [CLEAR] keys in this order.
Both CD and DVD data are cleared.

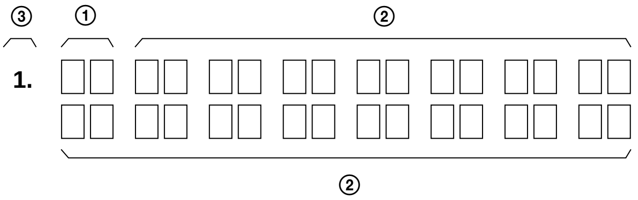
Clearing emergency history

◎ Press [TITLE] and [CLEAR] keys in this order.

Initializing set up data

◎ Press [DVD] and [CLEAR] keys in this order.
The data have been initialized when “Set Up Initialized” message is displayed. The EMG. History screen will be restored soon.

How to see Emergency History



①: Emergency Code
②: Don't Care
These codes are used for verification of software designing.
③: Historical order 1 to 9

Emergency Codes List

10: Communication to IC202 (MB-98 board) failed.
11: Each servo for focus, tracking, and spindle is unlocked.
12: Communication to EEPROM, IC101 (MB-98 board) failed.
13: Writing of hours meter data to EEPROM, IC101 (MB-98 board) failed.
14: Communication to Servo DSP IC302 (MB-98 board) failed, or Servo DSP is faulty.
20: Initialization of tilt servo and sled servo failed. They are not placed in the initial position.
21: Tilt servo operation error
22: Syscon made a request to move the tilt servo to wrong position.
23: Sled servo operation error
24: Syscon made a request to move the sled servo to wrong position.
30: Tracking balance adjustment error
31: Tracking gain adjustment error
32: Focus balance adjustment error
33: Focus bias adjustment error
34: Focus gain adjustment error
35: Tilt servo adjustment error
36: RF equalizer adjustment error
37: RF group delay adjustment error
38: Jitter value after adaptive servo operation is too large.
40: Focus servo does not operate.
41: With a dual layer (DL) disc, focus jump failed.
50: CLV (spindle) servo does not operate.
51: Spindle does not stop.
60: With a DVD disc, Syscon made a request to seek nonexistent address.
61: With a CD disc, Syscon made a request to seek nonexistent address.
62: With a CD disc, Syscon made a request to seek nonexistent track No. and index No.
63: With a DVD disc, seeking of target address failed.
64: With a CD disc, seeking of target address failed.
65: With a CD disc, seeking of target index failed.
70: With a DVD disc, physical information data could not be read.
71: With a CD disc, TOC data could not be read.
80: Disc type judgment failed.
81: As disc type judgment failed, retry was repeated.
82: As disc type judgment failed, a measurement error occurred.
83: Disc type could not be judged within the specified time.
84: Illegal command code was received from Syscon.
85: Illegal command was received from Syscon.

6-8. VERSION INFORMATION

```
   ## Version Information ##

IF con.    Ver : x. xxx (xxxx)
           Group    00

SYScon.    Ver : x. xxx (xxxx)
           Model    xx
           Region   0x
Servo DSP.  Ver : 1. xxxx
OPT Type : x LASER

Exit: RETURN
_
```

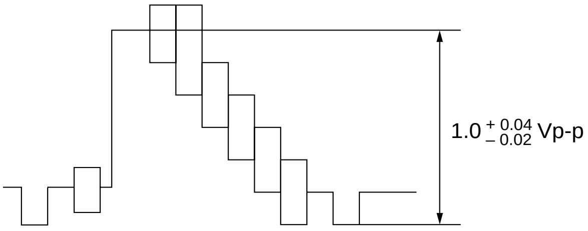
The ROM version, region code, OPT type, etc. are displayed if [5] is selected in the Test Mode Menu.
The parenthesized hexadecimal number in the version number field indicates the checksum value of the ROM.

Note : After down loading ROM data, sometimes it happens that checksum is not the same as that of ROM data which has been down loaded. In such a case, go back to the menu and select "0. Syscon Diagnosis", then select "1. All" in "2. Version". If the result of this operation does not give an agreement, it must be either Down Load error or ROM error.

6-9. VIDEO LEVEL ADJUSTMENT

On the Test Mode Menu screen, selecting [6] displays color bars for video level adjustment. During display of color bars, OSD disappears but the menu screen will be restored if pressing any key.

Measurement point : LINE OUT VIDEO
(75 Ω terminating resistance)
Measuring instrument : Oscilloscope
Adjustment device : RV501 on MB-98 board
Specified value : $1.0 {}^{+0.04}_{-0.02}$ Vp-p



6-10. IF CON SELF DIAGNOSTIC FUNCTION

1. AI-23 BOARD (IF CON) TEST MODE

The front board test mode is the IF CON self diagnostic mode. The IF CON can diagnose the functions of the front panel boards that the IF CON controls. Normally, the IF CON makes a serial communication with the SYSTEM CONTROL and operates following the commands from the SYSTEM CONTROL, but in the Test mode, the IF CON operates independently from the SYSTEM CONTROL.

In the Test mode, the following functions can be checked.

1. Button function
2. Remote commander receiving function
3. SYSTEM CONTROL-IF CON serial communication
4. Click shuttle function
5. Fluorescent display tube lighting check
   Grid check
   Anode check
6. LED control function

In the Test mode, the set operates same as usual, except voltage monitoring, communication monitoring, display of fluorescent display tube, and LED control.

1. The routine that monitors +3.3 V (P-CONT) of MB-98 board is not provided.
2. The monitoring timer for serial communication with the SYSTEM CONTROL is not provided. The set is not placed in the Standby mode, even if the communication with SYSTEM CONTROL is normal.
3. Display of fluorescent display tube (normally, display is made following the commands from SYSTEM CONTROL)
4. LED control (normally, control is made following the commands from SYSTEM CONTROL)

2. OPERATION OF SELF CHECK MODE

The Self Check mode is the function to conduct the basic test to the FL display and DVD panel section.

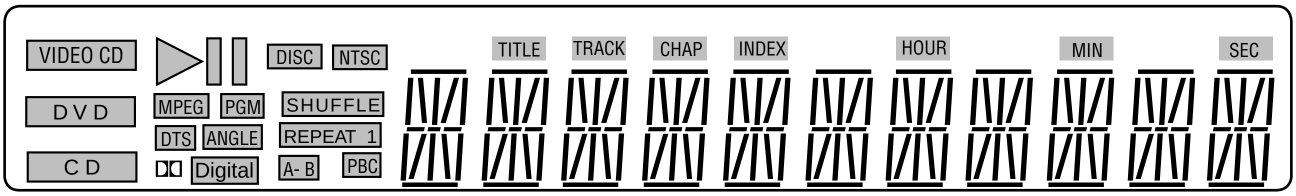
2-1. Self Check Mode Transition Processing

At the AC Power ON after IF CON (IC404) was reset, the input to 10pin (SELF CHECK) is judged and if "Low" is entered, the main unit transits to the Self Check mode. In this port input judgment, the result of 3-time attempts must be same (assuming that the MB-98 board is not connected). While pressing the [STOP] key on the main unit with the IF CON in STANDBY mode, enter [RETURN] → [DISPLAY] (or [SET UP]) on the remote commander, and the unit transits to the Self Check Mode. The Self Check mode terminates when the IF CON transits to the STANDBY mode.

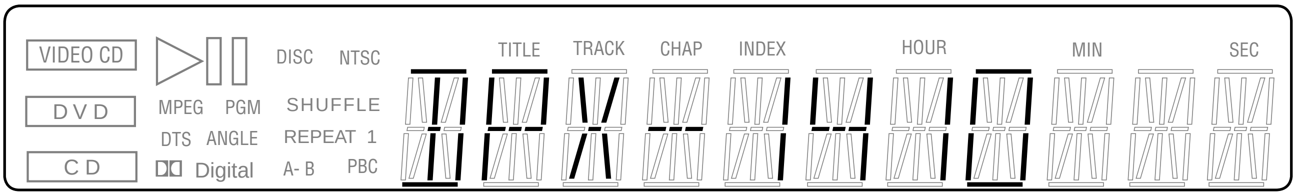
2-2. Operation of Auto Self Check

When the Self Check mode becomes active at the AC Power ON or by key input, the test display of the following steps (1) to (4) is repeated.

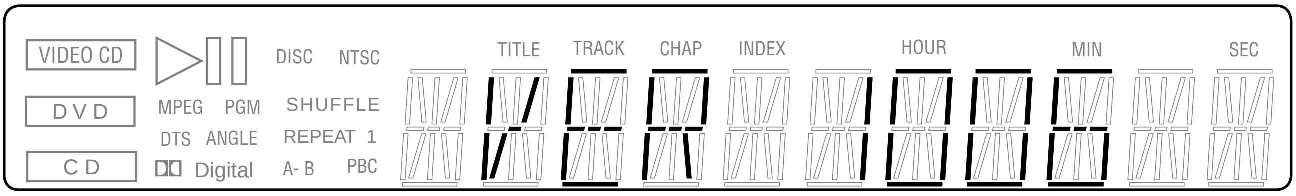
(1) FLD and LED all ON (for 5 seconds)



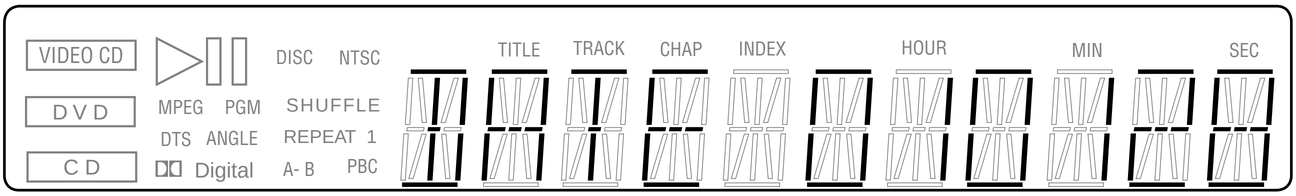
(2) MODEL display (for 2 seconds)



(3) Version display (for 2 seconds)



(4) ROM creation date display (for 2 seconds)



2-3. Each Self Check Function

Each Self Check function tests the FLD display, LED display, and key input.

Input Voltage [V]	IC404: Pin No. (Signal)				
	Pin ㉝ (BNRKEY)	Pin ㉞ (O/C)	Pin ㉟ (PLAY)	Pin ㊱ (DISPLAY)	Pin ㊲ (CURSOR)
0	SURROUND	OPEN/CLOSE	PLAY	STOP	ENTER
0.70	BNR	PAUSE	–	DISPLAY	DOWN
1.31	–	PREVIOUS	–	DVD MENU	LEFT
1.97	–	NEXT	–	RETURN	UP
2.59	–	–	–	TITLE	RIGHT
3.3	–	–	–	–	–

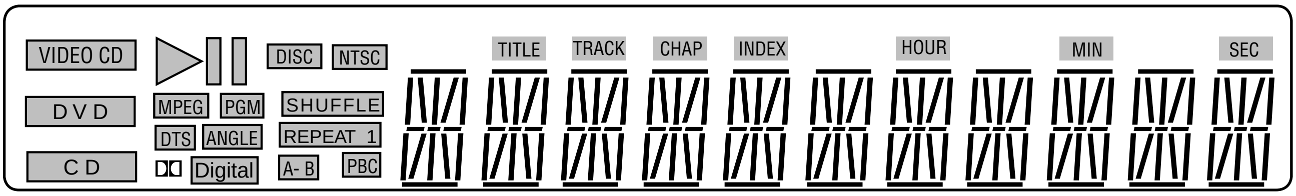
2-3-1. FLD and LED All ON

2-3-1-1. Transition Keys in Self Check Mode

- STOP key and OPEN/CLOSE key on the main unit
- LEFT key on the main unit and the remote commander

2-3-1-2. Operation and Display

In this mode, all LEDs except STANDBY LED and all segments of FLD turn ON.
Example of FLD all ON



2-3-2. Main Unit Key Name Display and Key Code Display

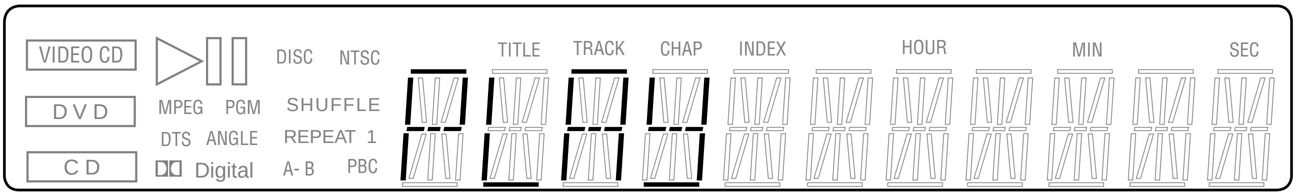
2-3-2-1. Transition Keys in Self Check Mode

- Keys on main unit except keys transited in self check

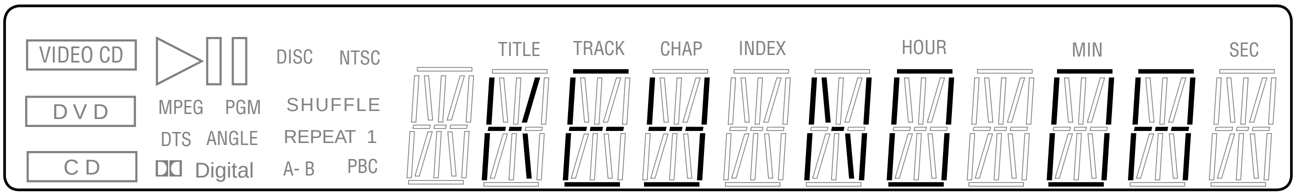
2-3-2-2. Operation and Display

When a key on the main unit is pressed in the Self Check mode, the name of that key is displayed on the FLD. Also, the key name display and the key code display can be switched with the DISPLAY key on the remote commander. "NOTHING" is displayed when nothing is entered. Also, VIDEO CD, DVD, and CD segments turn on when a communication error occurred.

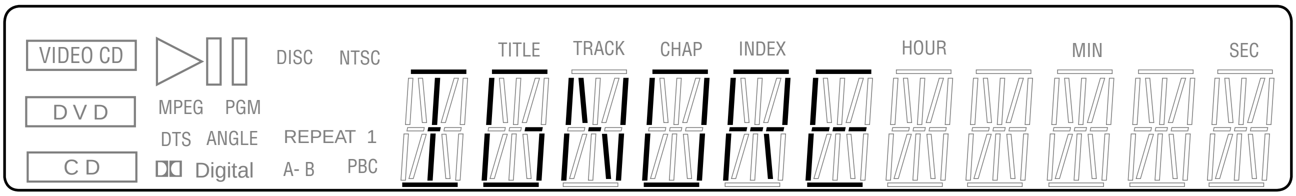
FLD display (at input of PLAY key on the main unit)



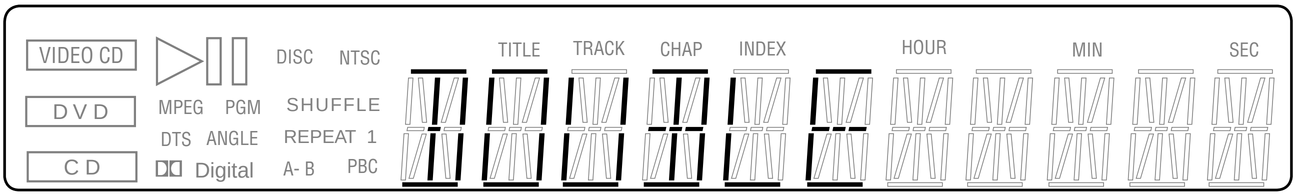
Key code display (at input of PLAY key, Key code: 0Ah)



At input of faulty voltage



When two keys are pressed



2-3-3. Remote Commander Key Name Display and Key Code Display

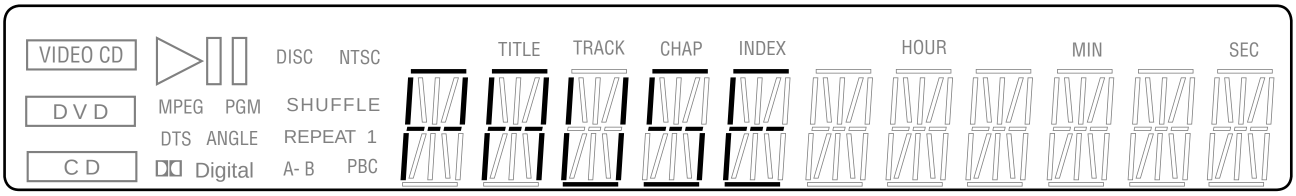
2-3-3-1. Transition Keys in Self Check Mode

- Remote commander keys except keys transited in self check

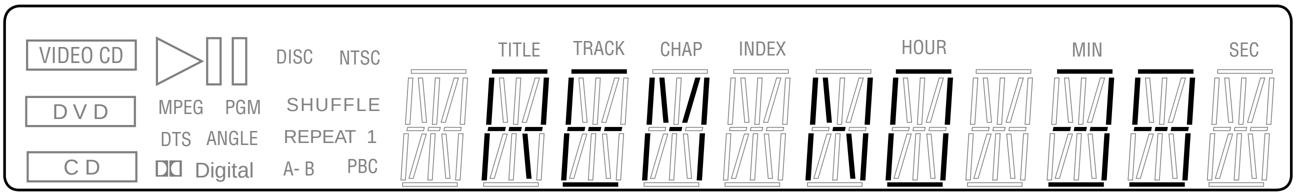
2-3-3-2. Operation and Display

When a key on the remote commander is pressed in the Self Check mode, the name of that key is displayed on the FLD. Also, the key name display and the key code display can be switched with the DISPLAY key on the remote commander. “NOTHING” is displayed when nothing is entered. Also, VIDEO CD, DVD, and CD segments turn on when a communication error occurred.

Remote commander key name display (at input of PAUSE key)



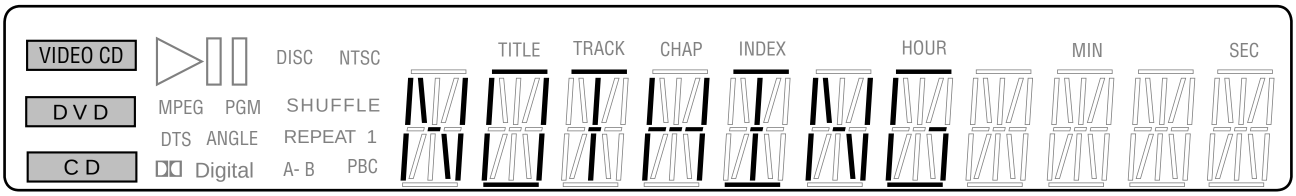
Remote commander key code display (at input of PAUSE key, Key code: 39h)



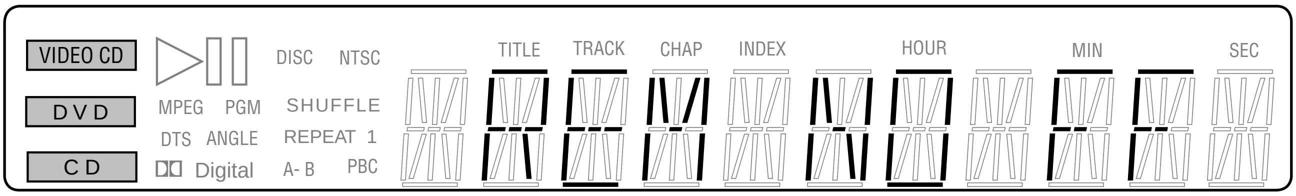
2-3-4. Communication Monitoring Display

The communication state is monitored and displayed while the key name on the main unit and the remote commander is displayed. When the communication to the System Controller failed, VIDEO CD, DVD, and CD segments turn on.

Communication error display (at no key input)



Communication error display (at code display without input of the remote commander)



2-3-5. FLD Anode Test Display and SHUTTLE Click Operation Test

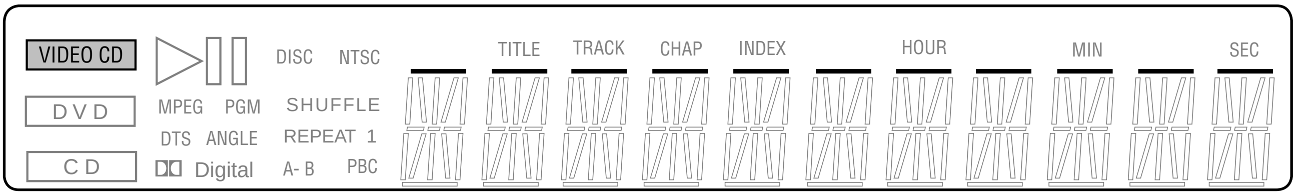
2-3-5-1. Transition Keys in Self Check Mode

- RIGHT on the main unit and the remote commander
- SHUTTLE on the remote commander during Anode Test display
  (This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/ SHUTTLE)

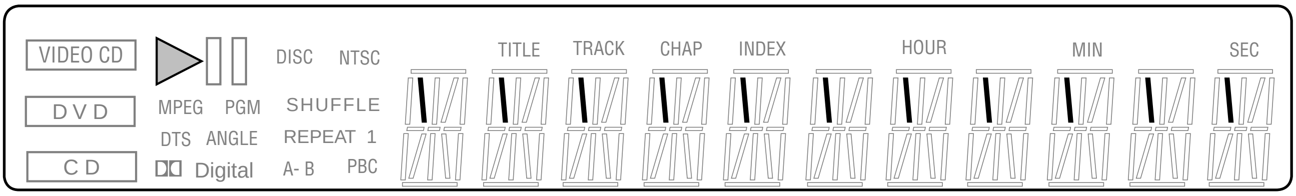
2-3-5-2. Operation and Display

The Self Check mode transits to this mode when RIGHT key is entered. Only the first segment of each grid of FLD turns on, and each time the SHUTTLE is entered, the segment of each grid is switched in order. When SHUTTLE input is clockwise, the segment switches in 1 → 2 → 3 direction, or counterclockwise it switches in 3 → 2 → 1 direction. This tests whether each segment turns on individually.

Display at the start of Anode Test



↓ (Input in CW direction)



2-3-6. FLD Grid Test Display and SHUTTLE Click Operation Test

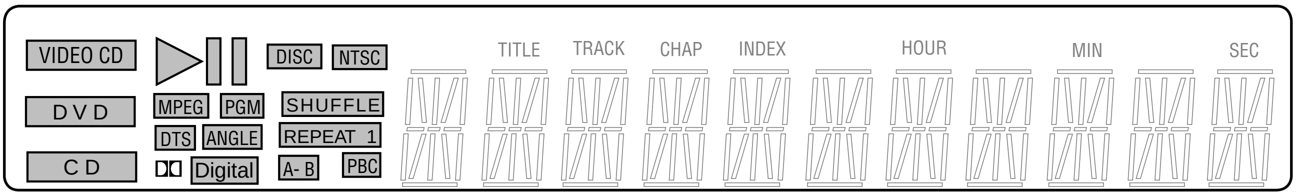
2-3-6-1. Transition Keys in Self Check Mode

- UP on the main unit and the remote commander
- SHUTTLE on the remote commander during Grid Test display (This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/ SHUTTLE)

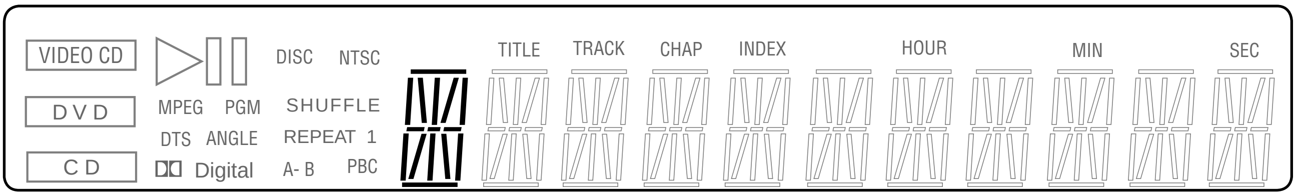
2-3-6-2. Operation and Display

The Self Check mode transits to this mode when UP key is entered. The first grid of FLD all turns on and other grids turn off. Each time the SHUTTLE is entered, the grid is switched in order. When SHUTTLE input is clockwise, the grid switches in 1 → 2 → 3 direction, or counterclockwise it switches in 3 → 2 → 1 direction. This tests whether each grid turns on individually.

Display at the start of Grid Test



↓ (Input in CW direction)



2-3-7. LED Test Display

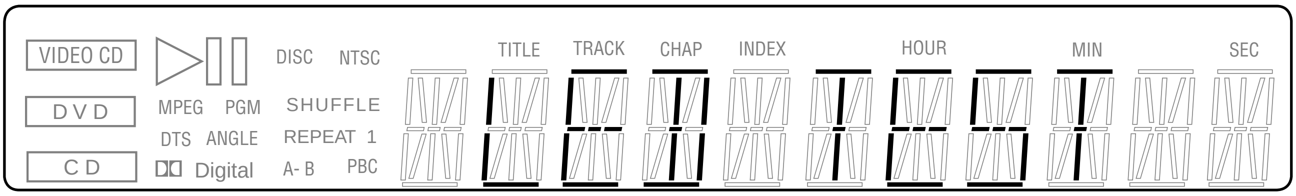
2-3-7-1. Transition Keys in Self Check Mode

- DOWN on the main unit and the remote commander
- SHUTTLE on the remote commander during LED Test display (This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/ SHUTTLE)

2-3-7-2. Operation and Display

LED is switched in order by the input of JOG/SHUTTLE. Also, LED ON/OFF is switched by the input of same key as the function that turns on the LED concerned. For the MULTI LED (DOLBY DIGITAL or MULTICHANNEL) only, there is no key which switches that function, and therefore use the RETURN key on the main unit.

FLD display during LED Test



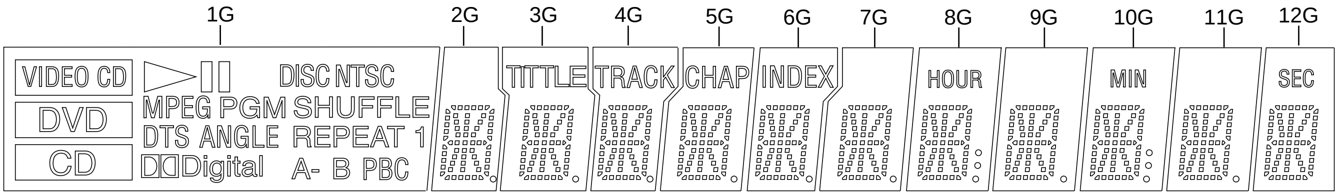
2-3-8. Beep Sound Test

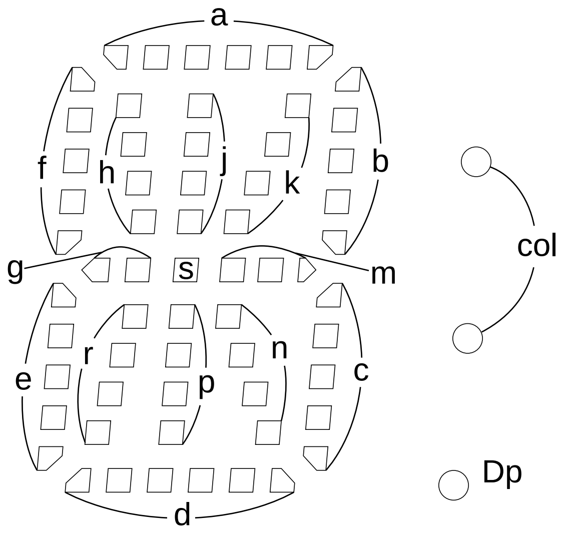
2-3-8-1. Transition Keys in Self Check Mode

- Input of a key on main unit

2-3-8-2. Operation and Display

In the Self Check mode, each time a key on the main unit is entered, a beep sound of 1kHz (100ms) is generated.





(1G~12G)

ANODE CONNECTION

	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G
P1	VIDEO CD	a	a	a	a	a	a	a	a	a	a	a
P2	▷	h	h	h	h	h	h	h	h	h	h	h
P3	II	j	j	j	j	j	j	j	j	j	j	j
P4	DISC	k	k	k	k	k	k	k	k	k	k	k
P5	NTSC	b	b	b	b	b	b	b	b	b	b	b
P6	DVD	f	f	f	f	f	f	f	f	f	f	f
P7	MPEG	m	m	m	m	m	m	m	m	m	m	m
P8	PGM	s	s	s	s	s	s	s	s	s	s	s
P9	SHUFFLE	g	g	g	g	g	g	g	g	g	g	g
P10	DTS	e	e	e	e	e	e	e	e	e	e	e
P11	ANGLE	n	n	n	n	n	n	n	n	n	n	n
P12	REPEAT	p	p	p	p	p	p	p	p	p	p	p
P13	1	r	r	r	r	r	r	r	r	r	r	r
P14	PBC	c	c	c	c	c	c	c	c	c	c	c
P15	B	d	d	d	d	d	d	d	d	d	d	d
P16	A-	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	-
P17	DDDigital	-	-	-	-	-	-	col	-	col	-	-
P18	CD	-	TITLE	TRACK	CHAP	INDEX	-	HOUR	-	MIN	-	SEC

6-11. TROUBLESHOOTING

6-11-1. Cannot Enter Test Mode

You cannot enter the Test mode when either button has been pressed by any reason with the board assembled in the front panel. In this state, the power does not turn on even under normal condition (the set is kept in standby state), and also no button is active and the remote commander is not accepted. In this case, disconnect the MB-98 board and with the SELF CHECK (⑩ pin) of IF CON (IC404) on the AI-23 board kept in low state, supply AC, and the Test mode will be forcibly activated. Or, on the board, short the land printed as "SELF" to enter the Test mode. The IF CON (IC404) checks the SELF CHECK port only after the power on reset (only at AC supply, not in standby state). If any button is pressed, its name is displayed on the fluorescent display tube. But, if other than "NOTHING" is displayed though no button is pressed, it means that any button has been pressed.

6-11-2. Faults in Test Mode (MB-98 Board)

1. Test mode menu is not displayed

- Board visual check
  Check main IC's, SYSTEM CONTROL (IC103), ROM (IC107 or IC108), AVD (IC503), and ARP & SERVO (IC302), for mounting condition, direction, or evidence of short between pins, or soldering failure. Also, compare with good board to check if there are missing capacitors or resistors.
- Clock signal check
  Measure the clock frequency at CPUCK ((77) pin) of the SYSTEM CONTROL (IC103) using an oscilloscope.
  If 33 MHz is outputted, an access to the ROM is normal, and then check the items in 1-2.
  In the case of 8.25 MHz output, check the items in 1-1.
  If it is fixed to "H" or "L", the X101 or SYSTEM CONTROL (IC103) will be faulty.

1-1. CPUCK (33 MHz) is not outputted

- Power supply voltage check
  Check the power connectors of the boards or power input pins of the IC's for voltage. Check the IC's in order of SYSTEM CONTROL (IC103), ROM (IC107 or IC108), AVD (IC503), and ARP & SERVO (IC302). If correct voltage is not outputted, the power line will be shorted, or soldering or IC will be faulty.
- Reset signal check
  Check that the XFRRST ((76) pin) of SYSTEM CONTROL (IC103) is "H" (3.3 V). If not "H", a soldering failure of that line, a shot with other line, or faulty SYSTEM CONTROL (IC103) is doubtful.
- XRD, XWRH, and CS0X signals check
  Using an oscilloscope, measure the XRD ((70) pin), XWRH ((71) pin), and CS0X ((58) pin) of the SYSTEM CONTROL (IC103) to check if they are fixed to "L" (0 V) or "H" (3.3 V), or if they are on the intermediate potential between "L" and "H". If they are fixed to "L" or "H", or on the intermediate potential, a soldering failure of that line, a shot with other line, or faulty SYSTEM CONTROL (IC103) is doubtful.
- HA [0 – 21] and HD [0 – 15] signals check
  Using an oscilloscope, measure the HA [0 – 21] ((102) – (109), (111) – (118), (120), ① – ⑤ pins) and HD [0 – 15] ((85) – (100) pins) of the SYSTEM CONTROL (IC103) to check if they are fixed to "L" (0 V) or "H" (3.3 V), or if HA is on the intermediate potential between "L" and "H" (HD is on intermediate potential in normal state), or if same waveform as that of adjacent pins is measured. In case of "L" or "H", intermediate potential, or same waveform, a soldering failure of that line, a shot with other line, or faulty SYSTEM CONTROL (IC103) is doubtful.

1-2. CPUCK (33 MHz) is outputted (communication with ROM is normal)

- AVD (IC503) check
  Using an oscilloscope, measure the SDCLKO ((149) pin) of the AVD (IC503) to check that 95 MHz is outputted. If not outputted, a short of 27 MHz line across CLKI ((180) pin) and SCLKIN ((182) pin), IC mounting failure, or faulty AVD (IC503) is doubtful. If 27 MHz is outputted, the communication between SYSTEM CONTROL (IC103) and AVD (IC503) is disabled, and therefore check the following items, particularly the AVD (IC503).
- WAIT signal check
  Using an oscilloscope, measure the XWAIT ((67) pin) of the SYSTEM CONTROL (IC103) to check if it is fixed to "L" (0 V) or on the intermediate potential. In case of "L" or intermediate potential, examine CS2X – CS5X ((60) – (63) pins) to check if any pin is fixed to "L".
  For the CS2X and CS3X, AVD (IC503) mounting failure or faulty IC is doubtful.
  For the CS4X and CS5X, ARP & SERVO (IC302) mounting failure or faulty IC is doubtful.
  If CS2X – CS5X are not "L", or they are sometimes on intermediate potential, a soldering failure of XWAIT line, a short with other line, or faulty SYSTEM CONTROL (IC103) is doubtful.
- INT signal check
  Using an oscilloscope, measure the INT0 – 2, 4 – 6 (⑯ – ⑱ pins, ⑳ – ㉒ pins) of the SYSTEM CONTROL (IC103) to check if INT0 – 2, and 6 are fixed to "L" (0 V) and INT5 is fixed to "H" (3.3 V), or they are on intermediate potential. In case of "L", "H", or intermediate potential, a soldering failure of IC's connected to that line, a short with other line, faulty SYSTEM CONTROL (IC103), or faulty each IC is doubtful.
  INT0 : AVD (IC503)
  INT1, INT2 : ARP & SERVO (IC302)
  INT5, INT6 : AUDIO DSP (IC701)
- CSnX signals check
  Using an oscilloscope, measure the CX0X – CX7X ((58) – (63), (65), (66) pins) of the SYSTEM CONTROL (IC103) to check if they are fixed to "L" (0 V), or two or more CS's sometime go "L", or on intermediate potential. In case of fixed "L", two or more CS's on "L" or intermediate potential, a soldering failure of IC's connected to that line, a short with other line, faulty SYSTEM CONTROL (IC103), or faulty each IC is doubtful.
  CS0X : ROM (IC107 or IC108)
  CS2X, CS3X : AVD (IC503)
  CS4X, CS5X : ARP & SERVO (IC302)
- Other CS signals check
  Using an oscilloscope, measure the VESCS/X39CS ((80) pin) and XDACS ((79) pin) of the SYSTEM CONTROL (IC103) to check if they are fixed to "L". If fixed, a soldering failure of that line, a short with other line, or faulty SYSTEM CONTROL (IC103) is doubtful.

If the above checking could not find a fault, check the outputted CS signal. If CS signal other than CS0X is outputted, a mounting failure of each IC or faulty IC that corresponds to active CS signal is doubtful.
  CS2X, CS3X: AVD (IC503)
  CS4X, CS5X: ARP & SERVO (IC302)

2. Test mode menu is displayed, but operation stops when a menu is selected

Using an oscilloscope, measure the PLCK0 ((95) pin) of the ARP & SERVO (IC302) to check if it is fixed to "L" (0 V) or "H" (3.3 V). If fixed to "L" or "H", the ARP & SERVO (IC302) is faulty. If not fixed, check the items in 1-2. in order.

3. Specific item failed in Diag All Check

A mounting failure of IC or faulty IC for that item is doubtful.
If "1901NG" is displayed, a loose connection of CN801, mounting failure of AUDIO DSP (IC701), or faulty IC is doubtful.

4. Picture and sound are not outputted

Check the CN801 and CN802 for connection, and the flat cable for damage or loose connection.

5. Picture is outputted, but sound is not outputted

A mounting failure of AUDIO DSP (IC701) or AUDIO DAC (IC802, IC803), power supply failure, or faulty IC is doubtful.

6. Sound is outputted, but picture is not outputted

Using an oscilloscope, measure the ⑥③, ⑥⑥, ⑥⑨, ⑦④, ⑦⑦, and ⑧⓪ pins of AVD (IC503) to check if analog signals are outputted respectively. If not outputted, a soldering failure of that line, a short with other line, missing capacitor or resistor, or faulty AVD is doubtful.

6-11-3. Drive Auto Adjustment stops by an error

Faulty analog circuits of ARP & SERVO (IC302) or faulty peripheral circuits of DIGITAL SERVO (IC202) on the MB-98 board, faulty optical pickup, or loose connection of flat cable is doubtful.

6-11-4. Power is Supplied but Unstable

If Syscon Diagnosis completed successfully, basically the boards other than MB-98 board, connection, optical pickup, or mechanical deck will be faulty.

1. Red LED does not light when AC is supplied

Check if the specified voltage is outputted from the EVER –11 V (③ pin), EVER +3.3 V (⑪ pin), and EVER +11 V (⑬ pin) of CN201 or CN920 in the power supply block. If not outputted, the power supply block will be faulty.

2. At [POWER] button ON, LED does not light in green even once, but kept in red (standby state)

Check if the specified voltage is outputted from the EVER –11 V (③ pin), EVER +3.3 V (⑪ pin), and EVER +11 V (⑬ pin) of CN201 or CN920 in the power supply block. If not outputted, the power supply block will be faulty.
Check the P-CONT (② pin) of CN401 on the AI-23 board if it becomes "H". If not "H", a soldering failure of that line, a short with other line, missing capacitor or resistor, faulty AVD (IC503), loose connection between power supply block and AI-23 board, loose connection of connectors, faulty power supply block, or faulty AI-23 board is doubtful.

3. At [POWER] button ON, LED lights in green but returns to red (standby state) after several seconds (e.g. it returns to standby state after "SONY DVD" was displayed)

There is no regularity between faulty parts and timing when the set returns to the standby state).
Check if the specified voltage is outputted from the power supply block. If not outputted, the power supply block will be faulty.
Check the XFRRST (⑨ pin) of CN101 on the MB-98 board if it is fixed to "L", or the XIBUSY (⑩ pin), XIFCS (⑪ pin), SI0 (⑫ pin), SO0 (⑬ pin) and SC0 (⑭ pin) of CN101 if they are fixed to "L" or "H".
If fixed to "L" or "H", a soldering failure of that line, a short with other line, missing capacitor or resistor, or faulty AVD (IC503) is doubtful.
If not fixed to "L" or "H", loose connection between power supply block and AI-23 board or between AI-23 board and MB-98 board, loose connection of connectors, or faulty AI-23 board is doubtful.

4. At [POWER] button ON, LED lights in green but fluorescent display tube does not light

Loose connection between power supply block and AI-23 board, loose connection of connectors, or faulty AI-23 board is doubtful.

5. Picture and sound are not outputted

Loose connection between power supply block and AI-23 board or between AI-23 board and MB-98 board, loose connection of connectors, or faulty AI-23 board is doubtful.

6. Picture is out outputted correctly

A mounting failure of BNR (IC601) on the MB-98 board, or faulty AVD (IC503) or ARP & SERVO (IC302), or faulty 27 MHz output (frequency, waveform) from 27-1OUT (③ pin) of PLL (IC102) is doubtful.

6-11-5. Power is not Supplied

1. Red LED does not light when AC is supplied

The power (EVER +3.3 V) is not supplied to the IF CON (IC404) on the AI-23 board.
The X401 does not oscillate.

2. At [POWER] button ON, LED is kept in red (standby state)

Any button has been pressed.
The voltage at PONCHK (㉚ pin) of the IF CON (IC404) on the AI-23 board exceeds 0.5 V.

3. At [POWER] button ON, LED lights in green but returns to red (standby state) after several seconds

The PONCHK (㉚ pin) of the IF CON (IC404) on the AI-23 board is abnormal (slow rising from 0.5 V to more than 1.5 V, or voltage not rising to more than 1.5 V).
The SYSTEM CONTROL (IC103) on the MB-98 board is faulty.

SECTION 7
ELECTRICAL ADJUSTMENT

In making adjustment, refer to 7-3. Adjustment Related Parts Arrangement.

Note: During diagnostic check, the characters and color bars can be seen only with the NTSC monitor. Therefore, for diagnostic check, use the monitor that supports both NTSC and PAL modes.
Use the reference disc for PAL for check, and use the reference disc for NTSC for adjustment.

This section describes procedures and instructions necessary for adjusting electrical circuits in this set.

Instruments required:

1) Color monitor TV
2) Oscilloscope 1 or 2 phenomena, band width over 100 MHz, with delay mode
3) Frequency counter (over 8 digits)
4) Digital voltmeter
5) Standard commander (RMT-D128A/D128P)
6) DVD reference disc
   HLX-501 (J-6090-071-A) (dual layer) (NTSC)
   HLX-503 (J-6090-069-A) (single layer) (NTSC)
   HLX-504 (J-6090-088-A) (single layer) (NTSC)
   HLX-505 (J-6090-089-A) (dual layer) (NTSC)
   HLX-506 (J-6090-077-A) (single layer) (PAL)
   HLX-507 (J-6090-078-A)(dual layer) (PAL)
7) SACD reference disc
   HLXA-509 (J-6090-090-A)
8) Extension Cable (J-6090-107-A)

Abbreviation:

AR : Argentina
BR : Brazilian
CND : Canadian
MX : Mexican

7-1. POWER SUPPLY CHECK

1. HS13S0E/HS13S0F/HS13S0U/TOP-244U Boards

Mode	E-E
Instrument	Digital voltmeter
EVER +3.3 V Check	
Test point	CN201/CN920 pin ⑪
Specification	3.5 ± 0.2 Vdc
SW +3.3 V Check	
Test point	CN201/CN920 pin ⑧
Specification	3.3 ± 0.2 Vdc
+5 V Check	
Test point	CN201/CN920 pin ⑫
Specification	5.0 ± 0.3 Vdc
SW +11 V Check	
Test point	CN201/CN920 pin ⑥, ⑦
Specification	$11.5^{+1.0}_{-1.5}$ Vdc
EVER +11 V Check	
Test point	CN201/CN920 pin ⑬
Specification	11.0 ± 1.0 Vdc
EVER –11 V Check	
Test point	CN201/CN920 pin ③
Specification	–11.0 ± 1.0 Vdc

Checking method:

1) Confirm that each voltage satisfies the specification.

7-2. ADJUSTMENT OF VIDEO SYSTEM

1. Video Level Adjustment (MB-98 BOARD)

<Purpose>

This adjustment is made to satisfy the NTSC/PAL standard, and if not adjusted correctly, the brightness will be too large or small.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	LINE OUT (VIDEO) connector (75 Ω terminated)
Instrument	Oscilloscope
Adjusting element	RV501
Specification	$1.0^{+0.04}_{-0.02}$ Vp-p

Adjusting method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Adjust the RV501 to attain $1.0^{+0.04}_{-0.02}$ Vp-p.

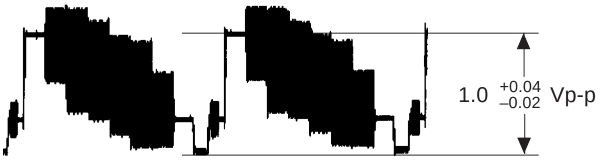


Figure 7-1

2. Checking S Video Output S-Y

<Purpose>

Check S-terminal video output. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with a S-terminal cable.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.0 ± 0.05 Vp-p

Checking method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Confirm that the S-Y level is 1.0 ± 0.05 Vp-p.

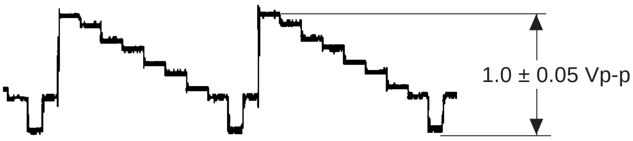


Figure 7-2

3. Checking S Video Output S-C

<Purpose>

This checks whether the S-C satisfies the NTSC/PAL Standard. If it is not correct, the colors will be too dark or light.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-C) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	A = 286 ± 30 mVp-p (NTSC) A = 300 ± 100 mVp-p (PAL)

Checking method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Confirm that the S-C burst is “A”.

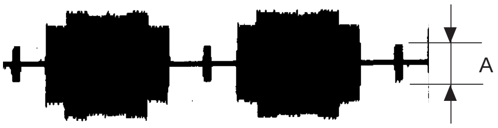


Figure 7-3

4. Checking Component Video Output Y (US, CND, E, MX, AR, BR Model)

<Purpose>

This checks component video output Y. If it is incorrect, correct brightness will not be attained when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.0 ± 0.05 Vp-p

Checking method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Confirm that the Y level is 1.0 ± 0.05 Vp-p.

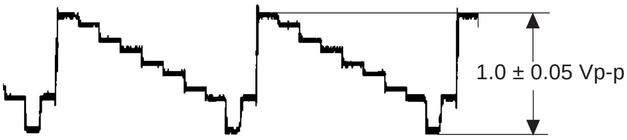


Figure 7-4

5. Checking Component Video Output B-Y (US, CND, E, MX, AR, BR Model)

<Purpose>

This checks component video output B-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (P_B) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 ± 50 mVp-p

Checking method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Confirm that the B-Y level is 700 ± 50 mVp-p.

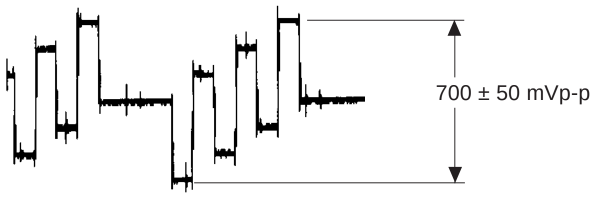


Figure 7-5

6. Checking Component Video Output R-Y (US, CND, E, MX, AR, BR Model)

<Purpose>

This checks component video output R-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (P_R) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 ± 50 mVp-p

Checking method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Confirm that the R-Y level is 700 ± 50 mVp-p.

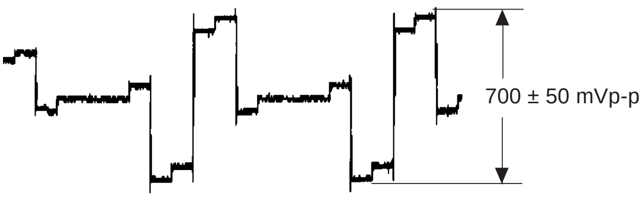


Figure 7-6

7. Checking RGB Output R (AEP, UK Model)

<Purpose>

This checks RGB output R. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with an EURO AV connecting cord.

Mode	In test mode, Push [0] for Syscon Diagnosis and push [7] for Video and push [5] for RGB out
Signal	Color bars
Test point	LINE 1 (RGB)-TV connector pin ⑮ (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 ± 50 mVp-p

Checking method:

1) Confirm that the R level is 700 ± 50 mVp-p.

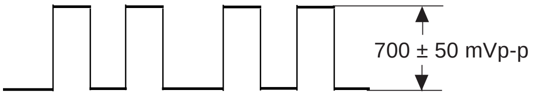


Figure 7-7

8. Checking RGB Output G (AEP, UK Model)

<Purpose>

This checks RGB output G. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with an EURO AV connecting cord.

Mode	In test mode, Push [0] for Syscon Diagnosis and push [7] for Video and push [5] for RGB out
Signal	Color bars
Test point	LINE 1 (RGB)-TV connector pin ⑪ (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 ± 50 mVp-p

Checking method:

1) Confirm that the G level is 700 ± 50 mVp-p.

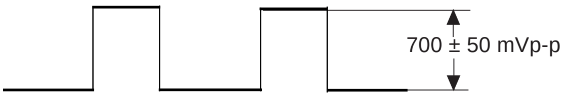


Figure 7-8

9. Checking RGB Output B (AEP, UK Model)

<Purpose>

This checks RGB output B. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with an EURO AV connecting cord.

Mode	In test mode, Push [0] for Syscon Diagnosis and push [7] for Video and push [5] for RGB out
Signal	Color bars
Test point	LINE 1 (RGB)-TV connector pin ⑦ (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 ± 50 mVp-p

Checking method:

1) Confirm that the B level is 700 ± 50 mVp-p.

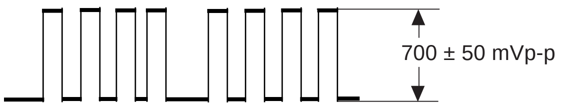
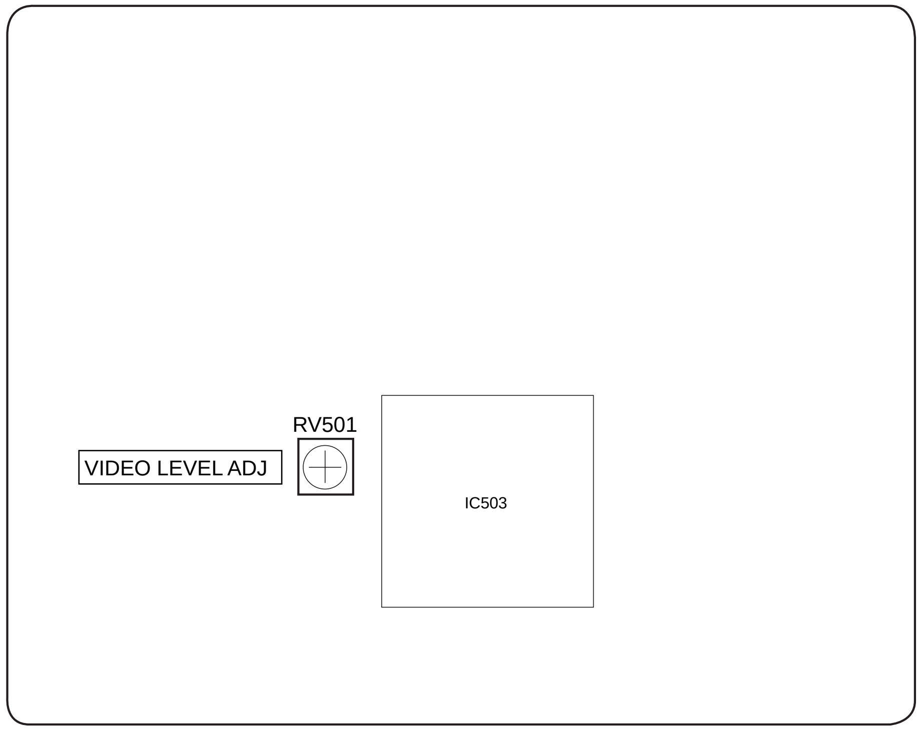


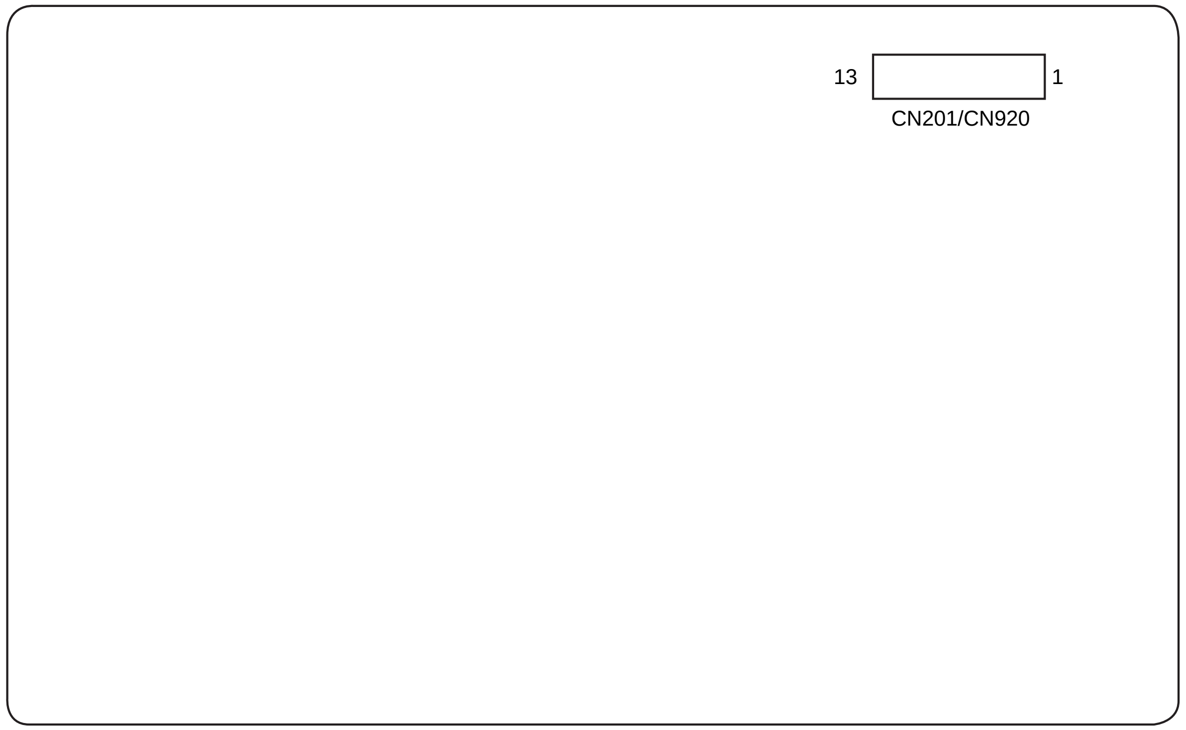
Figure 7-9

7-3. ADJUSTMENT RELATED PARTS ARRANGEMENT

MB-98 BOARD (SIDE A)



HS13S0E/HS13S0F/HS13S0U/TOP-244U BOARDS (SIDE A)



SECTION 8
REPAIR PARTS LIST

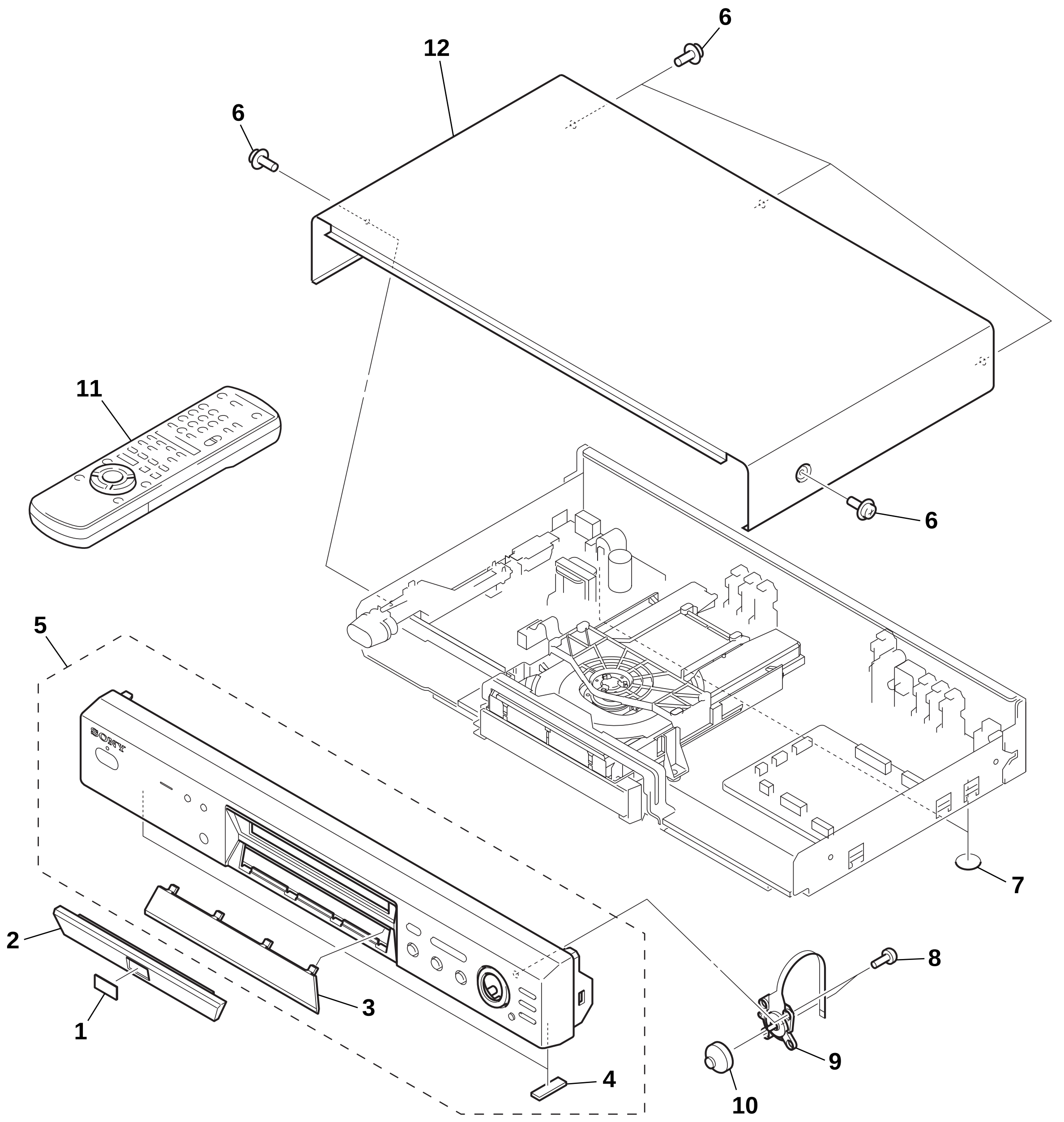
8-1. EXPLODED VIEWS

NOTE:
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ Parts Color ↑ Cabinet's Color
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories and packing materials are given in the last of the electrical parts list.
- Abbreviation
  AR : Argentina
  BR : Brazilian
  CND : Canadian
  MX : Mexican
- Description about model name
  DPX14xxBJ
  Name of production country
  J : Japan
  M : Malaysia
  Color of set
  B : Black
  H : Titanium gray

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

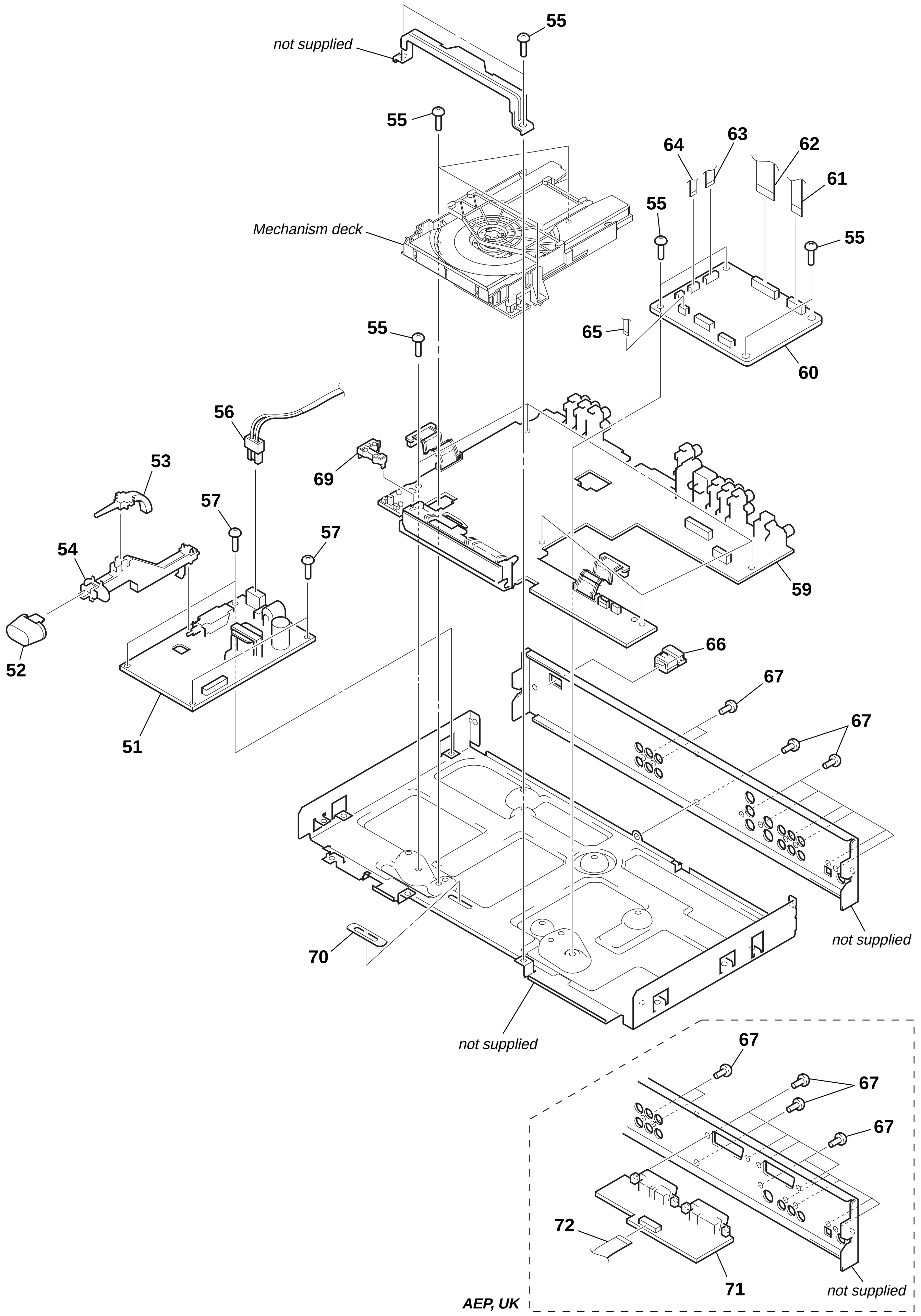
Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

8-1-1. CASE ASSEMBLY



Ref. No.	Part No.	Description	Remark
1	3-067-237-01	EMBLEM (V), DVD (US, CND, AEP (DPX1411BM), AEP (DPX1412BM), UK (DPX1411BM))	
1	3-067-237-11	EMBLEM (V), DVD (AEP (DPX1411HM), AEP (DPX1412HM), UK (DPX1411HM), E, MX, AR, BR)	
2	3-067-235-01	COVER (H), TRAY (US (DPX1410BJ), CND (DPX1410BJ))	
2	3-067-235-11	COVER (H), TRAY (US (DPX1410BM), CND (DPX1410BM), AEP (DPX1411BM), AEP (DPX1412BM), UK (DPX1411BM))	
2	3-067-236-01	COVER (P), TRAY (AEP (DPX1411HM), AEP (DPX1412HM), UK (DPX1411HM), E, MX, AR, BR)	
3	3-067-225-01	WINDOW	
4	3-059-349-11	CUSHION, FOOT	
5	A-6062-600-A	FRONT PANEL ASSY (BR)	
5	X-3951-513-1	FRONT PANEL ASSY (US)	
5	X-3951-514-1	FRONT PANEL ASSY (AEP (DPX1411BM), AEP (DPX1412BM), UK (DPX1411BM))	
5	X-3951-517-1	FRONT PANEL ASSY (AEP (DPX1411HM), AEP (DPX1412HM), UK (DPX1411HM))	
5	X-3951-540-1	FRONT PANEL ASSY (E, MX, AR)	
6	3-710-901-11	SCREW, TAPPING (US, CND, AEP (DPX1411BM), AEP (DPX1412BM), UK (DPX1411BM))	
6	3-710-901-61	SCREW, TAPPING (AEP (DPX1411HM), AEP (DPX1412HM), UK (DPX1411HM), E, MX, AR, BR)	
7	3-068-890-01	CUSHION, REAR LEG	
8	3-970-608-51	SUMITITE (B3), +BV	
9	1-786-131-11	SWITCH, TACTILE	
10	3-067-238-11	CURSOR STICK (US, CND, AEP (DPX1411BM), AEP (DPX1412BM), UK (DPX1411BM))	
10	3-067-238-21	CURSOR STICK (AEP (DPX1411HM), AEP (DPX1412HM), UK (DPX1411HM), E, MX, AR, BR)	
11	1-476-604-11	REMOTE COMMANDER (RMT-D128A) (US, CND, E, MX, AR, BR)	
11	1-476-605-11	REMOTE COMMANDER (RMT-D128P) (AEP, UK)	
12	3-068-047-01	CASE (EXCEPT AEP (DPX1411HM))	
12	3-068-047-11	CASE (AEP (DPX1411HM), AEP (DPX1412HM), UK (DPX1411HM), E, BR)	

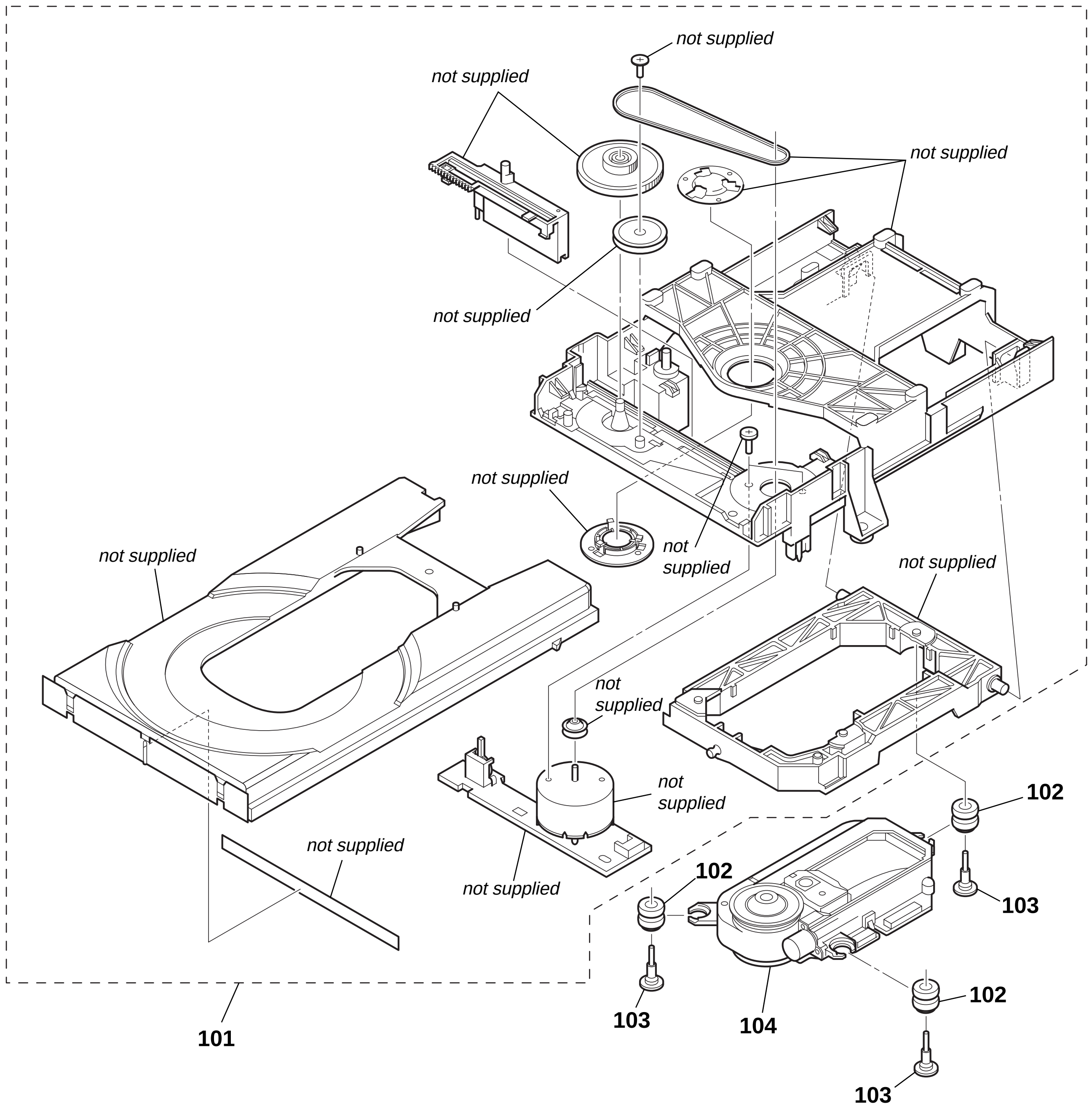
8-1-2. CHASSIS ASSEMBLY



Ref. No.	Part No.	Description	Remark
* 51	1-468-583-11	POWER BLOCK (HS13S0U) (US, CND, MX)	
* 51	1-468-584-11	POWER BLOCK (TOP-244U) (US, CND)	
* 51	1-468-585-11	POWER BLOCK (HS13S0E) (AEP, UK, AR)	
* 51	1-468-586-11	POWER BLOCK (HS13S0F) (E, BR)	
52	3-067-232-11	BUTTON (POWER) (US, CND, AEP (DPX1411BM), AEP (DPX1412BM), UK (DPX1411BM))	
52	3-067-232-21	BUTTON (POWER) (AEP (DPX1411HM), AEP (DPX1412HM), UK (DPX1411HM), E, MX, AR, BR)	
53	3-059-321-11	INDICATOR (P)	
54	3-067-233-11	JOINT (POWER)	
55	3-970-608-11	SUMITITE (B3), +BV	
⚠56	1-757-140-11	CORD, POWER (AEP, UK, E, BR)	
⚠56	1-757-571-11	CORD, POWER (US, CND, MX)	
⚠56	1-757-901-11	CORD, POWER (AR)	
57	3-050-569-01	SUMITITE (B3), +WHD	
* 59	A-6065-642-A	AI-23 BOARD, COMPLETE (US (DPX1410BJ), CND (DPX1410BJ))	
* 59	A-6065-664-A	AI-23 BOARD, COMPLETE (US (DPX1410BM), CND (DPX1410BM), E, MX, AR)	
* 59	A-6065-668-A	AI-23 BOARD, COMPLETE (AEP, UK)	
* 59	A-6065-707-A	AI-23 BOARD, COMPLETE (BR)	
* 60	A-6065-643-A	MB-98 BOARD, COMPLETE (US (DPX1410BJ), CND (DPX1410BJ))	
* 60	A-6065-665-A	MB-98 BOARD, COMPLETE (US (DPX1410BM), CND (DPX1410BM))	
* 60	A-6065-667-A	MB-98 BOARD, COMPLETE (E, MX, AR, BR)	
* 60	A-6065-669-A	MB-98 BOARD, COMPLETE (AEP (DPX1411BM), AEP (DPX1411HM), UK)	
* 60	A-6065-671-A	MB-98 BOARD, COMPLETE (AEP (DPX1412BM), AEP (DPX1412HM))	
61	1-757-696-11	CABLE, FLEXIBLE FLAT (FMA-024)	
62	1-757-695-11	CABLE, FLEXIBLE FLAT (FMA-023)	
63	1-757-693-11	CABLE, FLEXIBLE FLAT (FMO-001)	
64	1-757-694-11	CABLE, FLEXIBLE FLAT (FMO-002)	
65	1-757-697-11	CABLE, FLEXIBLE FLAT (FMM-035)	
66	4-966-267-12	BUSHING (FBS001), CORD	
67	3-970-608-51	SUMITITE (B3), +BV	
69	3-067-248-01	LED HOLDER	
70	3-069-090-01	COVER, EJECT	
* 71	A-6065-670-A	ER-15 BOARD, COMPLETE COMPL (AEP, UK)	
72	1-757-699-11	CABLE, FLEXIBLE FLAT (FAE-005) (AEP, UK)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

8-1-3. MECHANISM DECK ASSEMBLY



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
101	A-6062-514-A	LOADING ASSY (M) (US (DPX1410BM), CND (DPX1410BM), AEP, UK, E, MX, AR, BR)	
101	A-6062-517-A	LOADING ASSY (J) (US (DPX1410BJ), CND (DPX1410BJ))	
102	3-053-847-11	INSULATOR	
103	3-067-344-01	INSULATOR SCREW	
⚠104	A-4900-634-A	OPTICAL PICK-UP KHM-240 AAA/J1NP	

8-2. ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Not all of the parts for POWER BLOCK (HS13S0E, HS13S0F, HS13S0U and TOP-244U) are listed.
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.

- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA. . : μA. . uPA. . : μPA. .
  uPB. . : μPB. . uPC. . : μPC. .
  uPD. . : μPD. .
- CAPACITORS
  uF: μF
- COILS
  uH: μH
- Abbreviation
  AR : Argentina
  BR : Brazilian
  CND : Canadian
  MX : Mexican
- Description about model name
  DPX14xxBJ
  Name of production country
  J : Japan
  M : Malaysia
  Color of set
  B : Black
  H : Titanium gray

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	A-6065-642-A	AI-23 BOARD, COMPLETE (US (DPX1410BJ), CND (DPX1410BJ))			
*	A-6065-664-A	AI-23 BOARD, COMPLETE (US (DPX1410BM), CND (DPX1410BM), E, MX, AR)			
*	A-6065-668-A	AI-23 BOARD, COMPLETE (AEP, UK)			
*	A-6065-707-A	AI-23 BOARD, COMPLETE (BR)			
		********************** (Ref.No. 1,000 Series)			
	3-067-239-11	HOLDER, FL (US (DPX1410BJ), CND(DPX1410BJ), BR)			
	3-067-239-01	HOLDER, FL (US (DPX1410BM), CND (DPX1410BM), AEP, UK, E, MX, AR)			
		< BUZZER >			
BZ401	1-529-986-11	BUZZER, VOLTAGE			
		< CAPACITOR >			
C101	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C102	1-104-664-11	ELECT	47uF	20%	16V
C109	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C110	1-104-664-11	ELECT	47uF	20%	16V
C111	1-104-664-11	ELECT	47uF	20%	16V
C112	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C113	1-104-664-11	ELECT	47uF	20%	16V
C114	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C202	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C203	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C204	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C205	1-164-218-11	CERAMIC CHIP	180PF	5%	50V
C206	1-164-218-11	CERAMIC CHIP	180PF	5%	50V
C207	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C208	1-164-218-11	CERAMIC CHIP	180PF	5%	50V
C209	1-164-218-11	CERAMIC CHIP	180PF	5%	50V
C210	1-104-664-11	ELECT	47uF	20%	16V
C212	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C213	1-126-960-11	ELECT	1uF	20%	50V
C214	1-104-664-11	ELECT	47uF	20%	16V
C215	1-104-664-11	ELECT	47uF	20%	16V
C216	1-126-960-11	ELECT	1uF	20%	50V (AEP, UK)
C217	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C218	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C225	1-104-664-11	ELECT	47uF	20%	16V
C226	1-104-664-11	ELECT	47uF	20%	16V
C227	1-104-664-11	ELECT	47uF	20%	16V
C228	1-164-230-11	CERAMIC CHIP	220PF	5%	50V (AEP, UK)
C229	1-164-230-11	CERAMIC CHIP	220PF	5%	50V (AEP, UK)
C305	1-126-767-11	ELECT	1000uF	20%	16V
C306	1-126-960-11	ELECT	1uF	20%	50V
C309	1-126-924-11	ELECT	330uF	20%	6.3V
C313	1-164-315-11	CERAMIC CHIP	470PF	5%	50V (AEP, UK)
C314	1-164-315-11	CERAMIC CHIP	470PF	5%	50V (AEP, UK)
C315	1-164-315-11	CERAMIC CHIP	470PF	5%	50V (AEP, UK)
C316	1-164-315-11	CERAMIC CHIP	470PF	5%	50V (AEP, UK)
C317	1-164-315-11	CERAMIC CHIP	470PF	5%	50V (AEP, UK)
C319	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C320	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C321	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C322	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C323	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C324	1-115-416-11	CERAMIC CHIP	0.001uF	5%	25V
C325	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C326	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C327	1-104-664-11	ELECT	47uF	20%	16V
C328	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C329	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C330	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C331	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C332	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C333	1-115-416-11	CERAMIC CHIP	0.001uF	5%	25V
C334	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C335	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C336	1-164-217-11	CERAMIC CHIP	150PF	5%	50V

Ref. No.	Part No.	Description			Remark
C337	1-104-664-11	ELECT	47uF	20%	16V
C338	1-104-664-11	ELECT	47uF	20%	16V
C339	1-104-664-11	ELECT	47uF	20%	16V
C340	1-104-664-11	ELECT	47uF	20%	16V
C341	1-104-664-11	ELECT	47uF	20%	16V
C342	1-104-664-11	ELECT	47uF	20%	16V
C343	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C344	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C345	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C346	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C347	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C348	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C349	1-115-416-11	CERAMIC CHIP	0.001uF	5%	25V
C401	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C402	1-124-589-11	ELECT	47uF	20%	16V
C404	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C407	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C409	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C411	1-126-933-11	ELECT	100uF	20%	16V
C412	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C414	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C416	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C417	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C419	1-104-666-11	ELECT	220uF	20%	25V
C420	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C421	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C422	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C423	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C425	1-128-131-11	ELECT	22uF	20%	50V
C427	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C428	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C429	1-126-933-11	ELECT	100uF	20%	16V
C430	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C431	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C432	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C436	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C437	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C438	1-124-584-00	ELECT	100uF	20%	10V
C439	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
		< CONNECTOR >			
CN102	1-815-149-11	CONNECTOR, FPC/FFC (1MM PIC) 21P			(AEP, UK)
CN203	1-815-390-11	CONNECTOR, FFC/FPC 25P			
CN301	1-785-696-11	CONNECTOR, FFC/FPC 15P			
CN401	1-778-317-11	CONNECTOR, BOARD TO BOARD 13P			
CN402	1-815-381-11	CONNECTOR, FPC/FFC 5P			
CN403	1-815-458-21	CONNECTOR, BOARD TO BOARD 15P			
* CN405	1-785-530-11	PIN, CONNECTOR (PC BOARD) 10P			
		< DIODE >			
D004	8-719-071-15	DIODE HZM6.8ZWA1TL (US, CND, E, MX, AR, BR)			
D005	8-719-071-15	DIODE HZM6.8ZWA1TL			
D006	8-719-071-15	DIODE HZM6.8ZWA1TL			
D007	8-719-071-15	DIODE HZM6.8ZWA1TL (US, CND, E, MX, AR, BR)			
D201	8-719-914-43	DIODE DAN202K-T-146			
D202	8-719-914-44	DIODE DAP202K-T-146			
D203	8-719-914-44	DIODE DAP202K-T-146 (AEP, UK)			
D301	8-719-988-61	DIODE 1SS355TE-17			

Ref. No.	Part No.	Description	Remark
D402	8-719-083-33	DIODE EB3803X-TP-J300K (DOLBY DIGITAL)	
D403	8-719-041-97	DIODE MA113-(TX)	
D404	8-719-041-97	DIODE MA113-(TX)	
D405	8-719-041-97	DIODE MA113-(TX)	
D406	8-719-041-97	DIODE MA113-(TX)	
D412	8-719-422-62	DIODE MA8062-L-TX	
D414	8-719-056-06	DIODE SLR-342DCT32 (BNR)	
D415	8-719-056-06	DIODE SLR-342DCT32 (SURROUND)	
		< EARTH TERMINAL >	
* ET201	1-537-738-21	TERMINAL, EARTH	
		< FERRITE BEAD >	
FB301	1-216-295-11	SHORT 0	(US, CND, E, MX, AR, BR)
FB301	1-414-233-22	FERRITE 0uH	(AEP, UK)
FB401	1-469-324-21	FERRITE 0uH	
		< IC >	
IC101	8-759-667-17	IC L79M05TLL-SONY-TL	
IC102	8-759-826-45	IC LA73050-TLM (US, CND, E, MX, AR, BR)	
IC102	8-759-826-46	IC LA73051-TLM (AEP, UK)	
IC201	8-759-052-52	IC NJM78M05DL1A-TE1	
IC202	8-759-909-71	IC BA4558F-E2	
IC203	8-749-017-80	IC GP1FA551TZ (DIGITAL OUT - OPTICAL)	
IC302	8-759-909-71	IC BA4558F-E2	
IC303	8-759-909-71	IC BA4558F-E2	
IC304	8-759-909-71	IC BA4558F-E2	
IC401	8-749-019-11	IC GP1UD28SYK	
IC403	8-759-832-23	IC AN80P18RSPE1	
IC404	6-800-321-01	IC TMP86CK74F-3CB8	
IC405	8-759-684-35	IC S-80830ANUP-EDT-T2	
		< JACK >	
J101	1-815-358-11	JACK, PIN (3P) (LINE OUT) (AEP, UK)	
J101	1-815-362-11	JACK, PIN (6P) (LINE OUT)	(US, CND, E, MX, AR, BR)
J102	1-815-360-11	JACK, PIN (3P) (COMPONENT VIDEO OUT)	(US, CND, E, MX, AR, BR)
J103	1-694-484-21	TERMINAL, S (2P.V) (S VIDEO OUT)	(US, CND, E, MX, AR, BR)
J103	1-794-198-11	CONNECTOR, S TERMINAL (S VIDEO OUT)	(AEP, UK)
J201	1-793-446-21	JACK, PIN 1P (DIGITAL OUT - COAXIAL)	
J302	1-785-536-11	JACK, PIN (6P) (5.1CH OUTPUT)	
		< JUMPER RESISTOR >	
JR100	1-216-295-11	SHORT 0	
JR101	1-216-295-11	SHORT 0	
JR102	1-216-295-11	SHORT 0	
JR103	1-216-295-11	SHORT 0	
JR104	1-216-295-11	SHORT 0	
JR105	1-216-295-11	SHORT 0	
JR107	1-216-295-11	SHORT 0	
JR108	1-216-295-11	SHORT 0	
JR109	1-216-295-11	SHORT 0	
JR110	1-216-295-11	SHORT 0	
JR112	1-216-295-11	SHORT 0	
JR114	1-216-295-11	SHORT 0	
JR115	1-216-295-11	SHORT 0	
JR116	1-216-295-11	SHORT 0	

Ref. No.	Part No.	Description			Remark
JR117	1-216-295-11	SHORT	0		
JR118	1-216-295-11	SHORT	0		
JR119	1-216-295-11	SHORT	0		
JR121	1-216-295-11	SHORT	0		
JR125	1-216-295-11	SHORT	0		
JR400	1-216-295-11	SHORT	0		
JR401	1-216-295-11	SHORT	0		
JR402	1-216-295-11	SHORT	0		
JR404	1-216-295-11	SHORT	0		
JR409	1-216-295-11	SHORT	0		
JR411	1-216-295-11	SHORT	0		
		< COIL >			
L101	1-412-064-11	INDUCTOR	100uH		
L401	1-408-978-21	INDUCTOR	47uH		
		< FLUORESCENT INDICATOR TUBE >			
ND401	1-517-972-11	INDICATOR TUBE, FLUORESCENT			
		< IC LINK >			
⚠PS401	1-576-509-21	LINK, IC (1.0 A)			
⚠PS402	1-576-509-21	LINK, IC (1.0 A)			
		< TRANSISTOR >			
Q104	8-729-421-19	TRANSISTOR	UN2213-TX		
Q105	8-729-424-08	TRANSISTOR	UN2111-TX		
Q106	8-729-216-22	TRANSISTOR	2SA1162-YG-TE85L		(AEP, UK)
Q201	8-729-230-49	TRANSISTOR	2SC2712-YG-TE85L		
Q202	8-729-421-19	TRANSISTOR	UN2213-TX		
Q204	8-729-027-53	TRANSISTOR	DTC124TKA-T146		
Q205	8-729-216-22	TRANSISTOR	2SB709A-QRS-TX		
Q206	8-729-046-97	TRANSISTOR	2SD1938 (F) -T (TX).SO		
Q207	8-729-046-97	TRANSISTOR	2SD1938 (F) -T (TX).SO		
Q208	8-729-027-53	TRANSISTOR	DTC124TKA-T146		(AEP, UK)
Q209	8-729-216-22	TRANSISTOR	2SB709A-QRS-TX		(AEP, UK)
Q210	8-729-421-19	TRANSISTOR	UN2213-TX		(AEP, UK)
Q302	8-729-421-19	TRANSISTOR	UN2213-TX		
Q303	8-729-027-53	TRANSISTOR	DTC124TKA-T146		
Q304	8-729-216-22	TRANSISTOR	2SB709A-QRS-TX		
Q305	8-729-046-97	TRANSISTOR	2SD1938 (F) -T (TX).SO		
Q306	8-729-046-97	TRANSISTOR	2SD1938 (F) -T (TX).SO		
Q307	8-729-046-97	TRANSISTOR	2SD1938 (F) -T (TX).SO		
Q308	8-729-046-97	TRANSISTOR	2SD1938 (F) -T (TX).SO		
Q309	8-729-046-97	TRANSISTOR	2SD1938 (F) -T (TX).SO		
Q310	8-729-046-97	TRANSISTOR	2SD1938 (F) -T (TX).SO		
Q311	8-729-049-31	TRANSISTOR	2SB710-RTX		
Q312	8-729-230-49	TRANSISTOR	2SC2712-YG-TE85L		
Q313	8-729-216-22	TRANSISTOR	2SB709A-QRS-TX		
Q401	8-729-056-46	TRANSISTOR	2SC5053T100Q		
Q402	8-729-056-46	TRANSISTOR	2SC5053T100Q		
Q404	8-729-048-28	TRANSISTOR	2SD1766-T100-QR		
Q405	8-729-424-08	TRANSISTOR	UN2111-TX		
		< RESISTOR >			
R121	1-216-073-00	METAL CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R122	1-216-049-11	RES-CHIP	1K	5%	1/10W (AEP, UK)
R126	1-216-021-00	METAL CHIP	68	5%	1/10W (US, CND, E, MX, AR, BR)
R127	1-216-021-00	METAL CHIP	68	5%	1/10W (US, CND, E, MX, AR, BR)
R128	1-216-021-00	METAL CHIP	68	5%	1/10W (US, CND, E, MX, AR, BR)
R129	1-216-073-00	METAL CHIP	10K	5%	1/10W
R130	1-216-021-00	METAL CHIP	68	5%	1/10W (US, CND, E, MX, AR, BR)
R131	1-216-021-00	METAL CHIP	68	5%	1/10W
R132	1-216-021-00	METAL CHIP	68	5%	1/10W (US, CND, E, MX, AR, BR)
R133	1-216-021-00	METAL CHIP	68	5%	1/10W
R134	1-216-021-00	METAL CHIP	68	5%	1/10W
R135	1-216-021-00	METAL CHIP	68	5%	1/10W (US, CND, E, MX, AR, BR)
R201	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R202	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R203	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R204	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R205	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R206	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R207	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R208	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R209	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R210	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R211	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R212	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R213	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R215	1-216-033-00	METAL CHIP	220	5%	1/10W
R217	1-216-021-00	METAL CHIP	68	5%	1/10W
R218	1-216-065-00	RES-CHIP	4.7K	5%	1/10W (AEP, UK)
R219	1-216-073-00	METAL CHIP	10K	5%	1/10W
R220	1-216-049-11	RES-CHIP	1K	5%	1/10W
R221	1-216-049-11	RES-CHIP	1K	5%	1/10W
R222	1-216-073-00	METAL CHIP	10K	5%	1/10W
R223	1-216-049-11	RES-CHIP	1K	5%	1/10W
R224	1-216-073-00	METAL CHIP	10K	5%	1/10W
R225	1-216-089-11	RES-CHIP	47K	5%	1/10W
R226	1-216-041-00	METAL CHIP	470	5%	1/10W
R227	1-216-041-00	METAL CHIP	470	5%	1/10W
R228	1-216-073-00	METAL CHIP	10K	5%	1/10W
R229	1-216-089-11	RES-CHIP	47K	5%	1/10W
R230	1-216-089-11	RES-CHIP	47K	5%	1/10W
R231	1-216-073-00	METAL CHIP	10K	5%	1/10W (AEP, UK)
R232	1-216-073-00	METAL CHIP	10K	5%	1/10W (AEP, UK)
R233	1-216-089-11	RES-CHIP	47K	5%	1/10W (AEP, UK)
R234	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R235	1-216-065-00	RES-CHIP	4.7K	5%	1/10W (US, CND, E, MX, AR, BR)
R236	1-216-073-00	METAL CHIP	10K	5%	1/10W (AEP, UK)
R237	1-216-065-00	RES-CHIP	4.7K	5%	1/10W (AEP, UK)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
R238	1-216-097-11	RES-CHIP	100K	5%	1/10W
R239	1-216-097-11	RES-CHIP	100K	5%	1/10W (AEP, UK)
R240	1-216-041-00	METAL CHIP	470	5%	1/10W (US, CND, E, MX, AR, BR)
R241	1-216-041-00	METAL CHIP	470	5%	1/10W
R242	1-216-041-00	METAL CHIP	470	5%	1/10W (US, CND, E, MX, AR, BR)
R243	1-216-041-00	METAL CHIP	470	5%	1/10W
R301	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R302	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R308	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R309	1-216-041-00	METAL CHIP	470	5%	1/10W
R310	1-216-073-00	METAL CHIP	10K	5%	1/10W
R311	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R312	1-216-073-00	METAL CHIP	10K	5%	1/10W
R313	1-216-097-11	RES-CHIP	100K	5%	1/10W
R314	1-216-105-00	RES-CHIP	220K	5%	1/10W
R322	1-216-073-00	METAL CHIP	10K	5%	1/10W
R323	1-216-073-00	METAL CHIP	10K	5%	1/10W
R324	1-216-089-11	RES-CHIP	47K	5%	1/10W
R325	1-216-073-00	METAL CHIP	10K	5%	1/10W
R326	1-216-073-00	METAL CHIP	10K	5%	1/10W
R327	1-216-073-00	METAL CHIP	10K	5%	1/10W
R328	1-216-073-00	METAL CHIP	10K	5%	1/10W
R329	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R330	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R331	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R332	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R333	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R334	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R335	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R336	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R337	1-216-073-00	METAL CHIP	10K	5%	1/10W
R338	1-216-073-00	METAL CHIP	10K	5%	1/10W
R339	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R340	1-216-089-11	RES-CHIP	47K	5%	1/10W
R341	1-216-073-00	METAL CHIP	10K	5%	1/10W
R342	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R343	1-216-083-00	METAL CHIP	27K	5%	1/10W
R344	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R345	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R347	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R348	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R349	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R350	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R351	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R353	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R354	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R355	1-216-073-00	METAL CHIP	10K	5%	1/10W
R356	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R357	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R358	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R359	1-216-089-11	RES-CHIP	47K	5%	1/10W
R360	1-216-073-00	METAL CHIP	10K	5%	1/10W
R361	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R362	1-216-083-00	METAL CHIP	27K	5%	1/10W
R363	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R364	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R365	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R366	1-216-061-00	METAL CHIP	3.3K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R367	1-216-097-11	RES-CHIP	100K	5%	1/10W
R368	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R369	1-216-041-00	METAL CHIP	470	5%	1/10W
R370	1-216-041-00	METAL CHIP	470	5%	1/10W
R371	1-216-041-00	METAL CHIP	470	5%	1/10W
R372	1-216-041-00	METAL CHIP	470	5%	1/10W
R373	1-216-041-00	METAL CHIP	470	5%	1/10W
R374	1-216-041-00	METAL CHIP	470	5%	1/10W
R375	1-216-089-11	RES-CHIP	47K	5%	1/10W
R376	1-216-089-11	RES-CHIP	47K	5%	1/10W
R377	1-216-089-11	RES-CHIP	47K	5%	1/10W
R378	1-216-089-11	RES-CHIP	47K	5%	1/10W
R379	1-216-089-11	RES-CHIP	47K	5%	1/10W
R380	1-216-089-11	RES-CHIP	47K	5%	1/10W
R386	1-216-295-11	SHORT	0		
R395	1-216-295-11	SHORT	0		
R399	1-216-295-11	SHORT	0 (AEP, UK)		
R401	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R402	1-216-097-11	RES-CHIP	100K	5%	1/10W
R412	1-216-017-00	RES-CHIP	47	5%	1/10W
R413	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R414	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R415	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R416	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R417	1-216-097-11	RES-CHIP	100K	5%	1/10W
R418	1-216-073-00	METAL CHIP	10K	5%	1/10W
R420	1-216-025-11	RES-CHIP	100	5%	1/10W
R421	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R422	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R423	1-216-081-00	METAL CHIP	22K	5%	1/10W
R424	1-216-013-00	METAL CHIP	33	5%	1/10W
R425	1-216-025-11	RES-CHIP	100	5%	1/10W
R426	1-216-033-00	METAL CHIP	220	5%	1/10W
R427	1-216-063-00	RES-CHIP	3.9K	5%	1/10W
R428	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R429	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R430	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R431	1-216-063-00	RES-CHIP	3.9K	5%	1/10W
R433	1-216-073-00	METAL CHIP	10K	5%	1/10W
R434	1-216-073-00	METAL CHIP	10K	5%	1/10W
R435	1-216-073-00	METAL CHIP	10K	5%	1/10W
R437	1-216-027-00	METAL CHIP	120	5%	1/10W
R440	1-216-073-00	METAL CHIP	10K	5%	1/10W
R444	1-216-025-11	RES-CHIP	100	5%	1/10W
R446	1-216-097-11	RES-CHIP	100K	5%	1/10W
R448	1-216-073-00	METAL CHIP	10K	5%	1/10W
R449	1-216-073-00	METAL CHIP	10K	5%	1/10W
R450	1-216-073-00	METAL CHIP	10K	5%	1/10W
R455	1-216-073-00	METAL CHIP	10K	5%	1/10W
R470	1-216-073-00	METAL CHIP	10K	5%	1/10W
R472	1-216-073-00	METAL CHIP	10K	5%	1/10W
R474	1-216-025-11	RES-CHIP	100	5%	1/10W
R481	1-216-025-11	RES-CHIP	100	5%	1/10W
R482	1-216-025-11	RES-CHIP	100	5%	1/10W
R483	1-216-025-11	RES-CHIP	100	5%	1/10W
R484	1-216-025-11	RES-CHIP	100	5%	1/10W
R485	1-216-025-11	RES-CHIP	100	5%	1/10W
R486	1-216-033-00	METAL CHIP	220	5%	1/10W
R487	1-216-033-00	METAL CHIP	220	5%	1/10W
R490	1-216-081-00	METAL CHIP	22K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R491	1-216-081-00	METAL CHIP	22K	5%	1/10W
		< SWITCH >			
S401	1-771-574-21	SWITCH, TACTILE (BNR)			
S402	1-771-574-21	SWITCH, TACTILE (TITLE)			
S403	1-771-574-21	SWITCH, TACTILE (▶▶I)			
S404	1-771-574-21	SWITCH, TACTILE (SURROUND)			
S405	1-771-574-21	SWITCH, TACTILE (⤺ RETURN)			
S406	1-771-574-21	SWITCH, TACTILE (■)			
S407	1-771-574-21	SWITCH, TACTILE (DVD MENU)			
S408	1-771-574-21	SWITCH, TACTILE (I◀◀)			
S409	1-771-574-21	SWITCH, TACTILE (DISPLAY)			
S410	1-771-574-21	SWITCH, TACTILE (II)			
S411	1-771-574-21	SWITCH, TACTILE (▷)			
S412	1-771-574-21	SWITCH, TACTILE (⏏)			
		< TRANSFORMER >			
T401	1-435-947-11	TRANSFORMER, DC-DC CONVERT			
		< VIBRATOR >			
X401	1-781-472-21	VIBRATOR, CERAMIC (8 MHz)			

Ref. No.	Part No.	Description			Remark
*	A-6065-670-A	ER-15 BOARD, COMPLETE (AEP, UK)			
		**********************			
					(Ref. No. 1,000 Series)
		< CAPACITOR >			
C901	1-104-664-11	ELECT	47uF	20%	16V
C902	1-104-664-11	ELECT	47uF	20%	16V
C903	1-104-664-11	ELECT	47uF	20%	16V
C905	1-104-664-11	ELECT	47uF	20%	16V
C907	1-104-664-11	ELECT	47uF	20%	16V
C913	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C914	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C927	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C938	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C940	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C943	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C945	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C950	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C951	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C962	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C963	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
		< CONNECTOR >			
CN901	1-815-387-11	CONNECTOR, FPC/FFC 21P			
		< JACK >			
CNJ901	1-251-780-11	SOCKET, PIN (21P) (LINE 2)			
CNJ902	1-251-780-11	SOCKET, PIN (21P) (LINE 1 (RGB) - TV)			
		< DIODE >			
D901	8-719-988-61	DIODE 1SS355TE-17			
D902	8-719-988-61	DIODE 1SS355TE-17			
D903	8-719-988-61	DIODE 1SS355TE-17			
D904	8-719-988-61	DIODE 1SS355TE-17			
D905	8-719-988-61	DIODE 1SS355TE-17			

Ref. No.	Part No.	Description		Remark
D907	8-719-914-44	DIODE DAP202K-T-146		
D917	8-719-071-15	DIODE HZM6.8ZWA1TL		
D918	8-719-071-15	DIODE HZM6.8ZWA1TL		
D919	8-719-071-15	DIODE HZM6.8ZWA1TL		
D920	8-719-071-15	DIODE HZM6.8ZWA1TL		
D922	8-719-071-15	DIODE HZM6.8ZWA1TL		
D924	8-719-071-15	DIODE HZM6.8ZWA1TL		
D926	8-719-056-82	DIODE UDZ-TE-17-6.2B		
D927	8-719-977-40	DIODE UDZ-TE-17-13B		
D929	8-719-056-82	DIODE UDZ-TE-17-6.2B		
D930	8-719-977-40	DIODE UDZ-TE-17-13B		
		< FERRITE BEAD >		
FB901	1-414-766-22	FERRITE	0uH	
FB901	1-469-130-11	FERRITE	0uH	
FB901	1-469-796-21	FERRITE	0uH	
FB903	1-414-766-22	FERRITE	0uH	
FB903	1-469-130-11	FERRITE	0uH	
FB903	1-469-796-21	FERRITE	0uH	
FB904	1-414-766-22	FERRITE	0uH	
FB904	1-469-130-11	FERRITE	0uH	
FB904	1-469-796-21	FERRITE	0uH	
FB905	1-414-766-22	FERRITE	0uH	
FB905	1-469-130-11	FERRITE	0uH	
FB905	1-469-796-21	FERRITE	0uH	
FB907	1-414-766-22	FERRITE	0uH	
FB907	1-469-130-11	FERRITE	0uH	
FB907	1-469-796-21	FERRITE	0uH	
FB908	1-414-766-22	FERRITE	0uH	
FB908	1-469-130-11	FERRITE	0uH	
FB908	1-469-796-21	FERRITE	0uH	
FB909	1-414-766-22	FERRITE	0uH	
FB909	1-469-130-11	FERRITE	0uH	
FB909	1-469-796-21	FERRITE	0uH	
FB910	1-414-766-22	FERRITE	0uH	
FB910	1-469-130-11	FERRITE	0uH	
FB910	1-469-796-21	FERRITE	0uH	
FB911	1-414-233-22	FERRITE	0uH	
FB913	1-414-233-22	FERRITE	0uH	
FB916	1-414-233-22	FERRITE	0uH	
FB918	1-414-233-22	FERRITE	0uH	
		< IC >		
IC901	8-759-826-47	IC LA73052-TLM		
		< JUMPER RESISTOR >		
JR901	1-216-295-11	SHORT	0	
JR903	1-216-295-11	SHORT	0	
JR904	1-216-295-11	SHORT	0	
		< COIL >		
L905	1-412-064-11	INDUCTOR	100uH	
		< TRANSISTOR >		
Q901	8-729-421-19	TRANSISTOR	UN2213-TX	
Q902	8-729-422-27	TRANSISTOR	2SD601A-QRS-TX	
Q903	8-729-424-08	TRANSISTOR	UN2111-TX	
Q906	8-729-421-19	TRANSISTOR	UN2213-TX	
Q907	8-729-424-08	TRANSISTOR	UN2111-TX	

Ref. No.	Part No.	Description			Remark
Q908	8-729-421-22	TRANSISTOR	UN2211-TX		
Q909	8-729-421-19	TRANSISTOR	UN2213-TX		
Q910	8-729-424-08	TRANSISTOR	UN2111-TX		
Q912	8-729-422-27	TRANSISTOR	2SD601A-QRS-TX		
Q913	8-729-422-27	TRANSISTOR	2SD601A-QRS-TX		
Q914	8-729-422-27	TRANSISTOR	2SD601A-QRS-TX		
Q915	8-729-422-27	TRANSISTOR	2SD601A-QRS-TX		
		< RESISTOR >			
R905	1-216-089-11	RES-CHIP	47K	5%	1/10W
R906	1-216-089-11	RES-CHIP	47K	5%	1/10W
R907	1-216-089-11	RES-CHIP	47K	5%	1/10W
R908	1-216-105-00	RES-CHIP	220K	5%	1/10W
R909	1-216-037-00	METAL CHIP	330	5%	1/10W
R910	1-216-037-00	METAL CHIP	330	5%	1/10W
R911	1-216-037-00	METAL CHIP	330	5%	1/10W
R912	1-216-037-00	METAL CHIP	330	5%	1/10W
R914	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R915	1-216-049-11	RES-CHIP	1K	5%	1/10W
R916	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R917	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R918	1-216-021-00	METAL CHIP	68	5%	1/10W
R923	1-216-041-00	METAL CHIP	470	5%	1/10W
R924	1-216-041-00	METAL CHIP	470	5%	1/10W
R927	1-216-021-00	METAL CHIP	68	5%	1/10W
R928	1-216-021-00	METAL CHIP	68	5%	1/10W
R929	1-216-021-00	METAL CHIP	68	5%	1/10W
R930	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R931	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R932	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R933	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R938	1-216-021-00	METAL CHIP	68	5%	1/10W
R939	1-216-021-00	METAL CHIP	68	5%	1/10W
R950	1-216-081-00	METAL CHIP	22K	5%	1/10W
		< RELAY >			
RY901	1-515-622-11	RELAY			
RY902	1-515-622-11	RELAY			
RY903	1-515-622-11	RELAY			
RY904	1-515-622-11	RELAY			

* A-6065-643-A MB-98 BOARD, COMPLETE (US (DPX1410BJ), CND (DPX1410BJ))
* A-6065-665-A MB-98 BOARD, COMPLETE (US (DPX1410BM), CND (DPX1410BM))
* A-6065-667-A MB-98 BOARD, COMPLETE (E, MX, AR, BR)
* A-6065-669-A MB-98 BOARD, COMPLETE (AEP (DPX1411BM), AEP (DPX1411HM), UK)
* A-6065-671-A MB-98 BOARD, COMPLETE (AEP (DPX1412BM), AEP (DPX1412HM))

****

(Ref. No. 2,000 Series)

Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
C103	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C104	1-126-209-11	ELECT CHIP	100uF	20%	4V
C105	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C106	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C107	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C108	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C109	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C110	1-126-209-11	ELECT CHIP	100uF	20%	4V
C111	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C112	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C113	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C114	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C115	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C116	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C118	1-126-607-11	ELECT CHIP	47uF	20%	4V
C121	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C122	1-126-204-11	ELECT CHIP	47uF	20%	16V
C123	1-126-246-11	ELECT CHIP	220uF	20%	4V
C124	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C201	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C202	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C205	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C206	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C207	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C208	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C209	1-124-779-00	ELECT CHIP	10uF	20%	16V
C215	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C216	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C217	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C218	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C219	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C221	1-124-779-00	ELECT CHIP	10uF	20%	16V
C222	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C223	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C224	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C225	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C226	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C227	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C228	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C231	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C232	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C233	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C234	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C235	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C236	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C238	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C239	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C240	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C243	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C244	1-124-779-00	ELECT CHIP	10uF	20%	16V
C246	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C247	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C248	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C304	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C305	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C306	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C307	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C309	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C310	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C311	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C312	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C313	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C315	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C317	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C318	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C319	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C320	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C321	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

MB-98

Ref. No.	Part No.	Description			Remark
C322	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C323	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C324	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C325	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C326	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C327	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C328	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C331	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C332	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C333	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C334	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C335	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C336	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C337	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C338	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C339	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C340	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C341	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C342	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C343	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C344	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C346	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C347	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C348	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C349	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C350	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C351	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C401	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C402	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C403	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C404	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C405	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C406	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C407	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C408	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C409	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C410	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C411	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C412	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C413	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C414	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C415	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C416	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C417	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C418	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C419	1-126-204-11	ELECT CHIP	47uF	20%	16V
C420	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C421	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C427	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C428	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C501	1-126-193-11	ELECT	1uF	20%	50V
C502	1-124-779-00	ELECT CHIP	10uF	20%	16V
C503	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C504	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C505	1-124-779-00	ELECT CHIP	10uF	20%	16V
C506	1-124-779-00	ELECT CHIP	10uF	20%	16V
C508	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C509	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C510	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C512	1-126-246-11	ELECT CHIP	220uF	20%	4V

Ref. No.	Part No.	Description			Remark
C513	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C514	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C516	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C518	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C519	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C520	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C521	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C522	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C523	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C524	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C525	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C526	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C528	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C529	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C530	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C531	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C532	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C533	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C534	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C535	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C536	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C537	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C538	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C539	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C540	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C541	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C542	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C544	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C545	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C546	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C547	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C601	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C602	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C603	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C604	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C703	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C704	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C705	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C706	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C707	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C708	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C709	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C710	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C711	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C713	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C714	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C715	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C716	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C717	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C718	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C719	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C720	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C721	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C722	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C723	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C724	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C803	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C806	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C812	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C813	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V

Ref. No.	Part No.	Description			Remark
C816	1-124-779-00	ELECT CHIP	10uF	20%	16V
C819	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C827	1-124-779-00	ELECT CHIP	10uF	20%	16V
C829	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
		< CONNECTOR >			
CN101	1-815-459-21	CONNECTOR, BOARD TO BOARD 15P			
* CN103	1-770-470-21	PIN, CONNECTOR (PC BOARD) 6P			
CN201	1-815-507-11	CONNECTOR, FFC/FPC 26P			
CN202	1-779-935-11	CONNECTOR, FFC/FPC 9P			
CN402	1-779-353-21	CONNECTOR, FFC/FPC 5P			
CN801	1-815-396-21	CONNECTOR, FFC/FPC 25P			
CN802	1-815-395-21	CONNECTOR, FFC/FPC 15P			
		< DIODE >			
D801	8-719-024-81	DIODE 1SS300-TE85L			
		< FERRITE BEAD >			
FB102	1-469-324-21	FERRITE	0uH		
FB103	1-469-324-21	FERRITE	0uH		
FB104	1-469-324-21	FERRITE	0uH		
FB105	1-469-324-21	FERRITE	0uH		
FB106	1-469-324-21	FERRITE	0uH		
FB107	1-469-324-21	FERRITE	0uH		
FB108	1-469-324-21	FERRITE	0uH		
FB109	1-469-784-11	FERRITE	0uH		
FB110	1-469-324-21	FERRITE	0uH		
FB111	1-469-784-11	FERRITE	0uH		
FB112	1-469-784-11	FERRITE	0uH		
FB701	1-469-784-11	FERRITE	0uH		
FB702	1-469-784-11	FERRITE	0uH		
		< FILTER >			
FL101	1-234-177-21	FILTER, CHIP EMI			
FL102	1-234-177-21	FILTER, CHIP EMI			
FL103	1-234-177-21	FILTER, CHIP EMI			
FL104	1-233-893-21	FILTER, CHIP EMI			
FL105	1-234-177-21	FILTER, CHIP EMI			
FL106	1-234-177-21	FILTER, CHIP EMI			
FL108	1-234-177-21	FILTER, CHIP EMI			
FL201	1-234-177-21	FILTER, CHIP EMI			
FL501	1-234-177-21	FILTER, CHIP EMI			
FL502	1-234-177-21	FILTER, CHIP EMI			
FL505	1-234-177-21	FILTER, CHIP EMI			
		< IC >			
IC101	8-759-699-33	IC CAT24WC16J-TE13			
IC101	8-759-641-86	IC BR24C16F-E2			
IC102	8-759-831-81	IC IMIC6001BTD			
IC103	8-759-829-75	IC MB91307APFV-G-BND-E1			
IC107	Note				
IC108	Note				
IC202	8-759-828-02	IC SP3728AC			
IC301	8-759-832-31	IC TK71533ASCL			
IC302	8-759-828-01	IC CXD9635R			
IC303	8-759-643-10	IC GM71V18160CT-6TR			
IC401	8-759-826-42	IC FAN8034			
IC501	8-759-832-30	IC TK71518ASCL			
IC502	8-759-599-45	IC MM1385ENLE			
IC503	8-752-409-87	IC CXD1933Q			
IC504	8-759-683-76	IC K4S161622D-TC80T			
IC505	8-759-683-76	IC K4S161622D-TC80T			
IC601	8-759-826-44	IC CXD9632Q			
IC701	8-752-402-09	IC CXD1939R			
IC802	8-759-825-32	IC CXD9627N-E2			
IC803	8-759-825-33	IC CXD9628N-E2			
		< COIL >			
L201	1-412-031-11	INDUCTOR CHIP	47uH		
L202	1-412-031-11	INDUCTOR CHIP	47uH		
		< TRANSISTOR >			
Q201	8-729-903-46	TRANSISTOR	2SB1132-T100-QR		
Q202	8-729-903-46	TRANSISTOR	2SB1132-T100-QR		
		< RESISTOR >			
R101	1-216-789-11	METAL CHIP	2.2	5%	1/16W
R106	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R107	1-216-821-11	METAL CHIP	1K	5%	1/16W
R108	1-216-797-11	METAL CHIP	10	5%	1/16W
R109	1-216-797-11	METAL CHIP	10	5%	1/16W
R111	1-216-817-11	METAL CHIP	470	5%	1/16W
R112	1-216-821-11	METAL CHIP	1K	5%	1/16W
R113	1-216-833-11	METAL CHIP	10K	5%	1/16W
R114	1-216-845-11	METAL CHIP	100K	5%	1/16W
R116	1-216-833-11	METAL CHIP	10K	5%	1/16W
R117	1-216-821-11	METAL CHIP	1K	5%	1/16W
R118	1-216-821-11	METAL CHIP	1K	5%	1/16W
R119	1-216-833-11	METAL CHIP	10K	5%	1/16W
R121	1-216-833-11	METAL CHIP	10K	5%	1/16W
R123	1-216-833-11	METAL CHIP	10K	5%	1/16W
R124	1-216-797-11	METAL CHIP	10	5%	1/16W
R125	1-216-797-11	METAL CHIP	10	5%	1/16W
R126	1-216-797-11	METAL CHIP	10	5%	1/16W
R127	1-216-797-11	METAL CHIP	10	5%	1/16W
R128	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R129	1-216-833-11	METAL CHIP	10K	5%	1/16W
R130	1-216-833-11	METAL CHIP	10K	5%	1/16W
R131	1-216-833-11	METAL CHIP	10K	5%	1/16W
R132	1-216-833-11	METAL CHIP	10K	5%	1/16W
R133	1-216-833-11	METAL CHIP	10K	5%	1/16W
R134	1-216-833-11	METAL CHIP	10K	5%	1/16W
R136	1-216-797-11	METAL CHIP	10	5%	1/16W
R137	1-216-797-11	METAL CHIP	10	5%	1/16W
R138	1-216-797-11	METAL CHIP	10	5%	1/16W
R139	1-216-797-11	METAL CHIP	10	5%	1/16W
R141	1-216-797-11	METAL CHIP	10	5%	1/16W
R142	1-216-797-11	METAL CHIP	10	5%	1/16W
R143	1-216-833-11	METAL CHIP	10K	5%	1/16W
R145	1-216-833-11	METAL CHIP	10K	5%	1/16W
R146	1-216-833-11	METAL CHIP	10K	5%	1/16W
R149	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R150	1-216-069-00	METAL CHIP	6.8K	5%	1/10W

(AEP (DPX1412BM), AEP (DPX1412HM))

Note: Part number has not been determined yet.
It will be noticed later.

Ref. No.	Part No.	Description			Remark
R150	1-216-075-00	METAL CHIP	12K	5%	1/10W
		(AEP (DPX1411BM), AEP (DPX1411HM), UK)			
R150	1-216-081-00	METAL CHIP	22K	5%	1/10W
					(E, MX, AR, BR)
R151	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R152	1-216-089-11	RES-CHIP	47K	5%	1/10W
R153	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R154	1-216-075-00	METAL CHIP	12K	5%	1/10W
					(E, MX, AR, BR)
R154	1-216-089-11	RES-CHIP	47K	5%	1/10W
					(AEP, UK)
R155	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R156	1-216-833-11	METAL CHIP	10K	5%	1/16W
R157	1-216-864-91	SHORT	0		
R160	1-216-833-11	METAL CHIP	10K	5%	1/16W
R161	1-216-864-91	SHORT	0		
R162	1-216-833-11	METAL CHIP	10K	5%	1/16W
R163	1-216-833-11	METAL CHIP	10K	5%	1/16W
R164	1-126-809-11	METAL CHIP	100	5%	1/16W
R165	1-126-809-11	METAL CHIP	100	5%	1/16W
R166	1-216-817-11	METAL CHIP	470	5%	1/16W
R167	1-216-864-91	SHORT	0		
R168	1-216-864-91	SHORT	0		
R170	1-216-821-11	METAL CHIP	1K	5%	1/16W
R175	1-216-864-91	SHORT	0		
R177	1-216-797-11	METAL CHIP	10	5%	1/16W
R178	1-216-797-11	METAL CHIP	10	5%	1/16W
R182	1-216-845-11	METAL CHIP	100K	5%	1/16W
R199	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R201	1-216-815-11	METAL CHIP	330	5%	1/16W
R202	1-216-809-11	METAL CHIP	100	5%	1/16W
R203	1-216-809-11	METAL CHIP	100	5%	1/16W
R204	1-216-837-11	METAL CHIP	22K	5%	1/16W
R205	1-216-845-11	METAL CHIP	100K	5%	1/16W
R206	1-216-838-11	METAL CHIP	27K	5%	1/16W
R207	1-216-803-11	METAL CHIP	33	5%	1/16W
R208	1-216-803-11	METAL CHIP	33	5%	1/16W
R209	1-216-821-11	METAL CHIP	1K	5%	1/16W
R210	1-216-841-11	METAL CHIP	47K	5%	1/16W
R211	1-216-809-11	METAL CHIP	100	5%	1/16W
R212	1-216-864-91	SHORT	0		
R215	1-216-864-91	SHORT	0		
R216	1-216-864-91	SHORT	0		
R219	1-216-864-91	SHORT	0		
R220	1-216-803-11	METAL CHIP	33	5%	1/16W
R223	1-216-803-11	METAL CHIP	33	5%	1/16W
R224	1-216-801-11	METAL CHIP	22	5%	1/16W
R225	1-216-841-11	METAL CHIP	47K	5%	1/16W
R229	1-216-809-11	METAL CHIP	100	5%	1/16W
R237	1-216-834-11	METAL CHIP	12K	5%	1/16W
R238	1-216-861-11	METAL CHIP	2.2M	5%	1/16W
R245	1-216-809-11	METAL CHIP	100	5%	1/16W
R246	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R299	1-216-847-11	METAL CHIP	150K	5%	1/16W
R301	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R302	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R305	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R306	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R307	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R308	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R309	1-216-829-11	METAL CHIP	4.7K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R310	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R311	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R312	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R313	1-216-817-11	METAL CHIP	470	5%	1/16W
R314	1-216-817-11	METAL CHIP	470	5%	1/16W
R315	1-216-817-11	METAL CHIP	470	5%	1/16W
R316	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R317	1-216-833-11	METAL CHIP	10K	5%	1/16W
R318	1-216-295-11	SHORT	0		
R319	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R320	1-216-295-11	SHORT	0		
R321	1-216-817-11	METAL CHIP	470	5%	1/16W
R328	1-216-833-11	METAL CHIP	10K	5%	1/16W
R329	1-216-295-11	SHORT	0		
R330	1-216-295-11	SHORT	0		
R334	1-218-871-11	METAL CHIP	10K	0.5%	1/16W
R335	1-218-855-11	METAL CHIP	2.2K	0.5%	1/16W
R336	1-216-833-11	METAL CHIP	10K	5%	1/16W
R337	1-216-809-11	METAL CHIP	100	5%	1/16W
R338	1-218-879-11	METAL CHIP	22K	0.5%	1/16W
R341	1-218-871-11	METAL CHIP	10K	0.5%	1/16W
R342	1-218-883-11	METAL CHIP	33K	0.5%	1/16W
R343	1-218-831-11	METAL CHIP	220	0.5%	1/16W
R344	1-218-847-11	METAL CHIP	1K	0.5%	1/16W
R345	1-216-833-11	METAL CHIP	10K	5%	1/16W
R349	1-216-838-11	METAL CHIP	27K	5%	1/16W
R350	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R351	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R352	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R356	1-218-853-11	METAL CHIP	1.8K	0.5%	1/16W
R368	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R384	1-216-797-11	METAL CHIP	10	5%	1/16W
R385	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R402	1-216-833-11	METAL CHIP	10K	5%	1/16W
R403	1-216-833-11	METAL CHIP	10K	5%	1/16W
R404	1-216-821-11	METAL CHIP	1K	5%	1/16W
R405	1-216-821-11	METAL CHIP	1K	5%	1/16W
R406	1-216-846-11	METAL CHIP	120K	5%	1/16W
R407	1-216-846-11	METAL CHIP	120K	5%	1/16W
R408	1-216-847-11	METAL CHIP	150K	5%	1/16W
R409	1-216-847-11	METAL CHIP	150K	5%	1/16W
R410	1-216-842-11	METAL CHIP	56K	5%	1/16W
R411	1-216-842-11	METAL CHIP	56K	5%	1/16W
R412	1-216-850-11	METAL CHIP	270K	5%	1/16W
R413	1-216-833-11	METAL CHIP	10K	5%	1/16W
R414	1-216-853-11	METAL CHIP	470K	5%	1/16W
R415	1-216-846-11	METAL CHIP	120K	5%	1/16W
R416	1-216-855-11	METAL CHIP	680K	5%	1/16W
R417	1-216-833-11	METAL CHIP	10K	5%	1/16W
R418	1-216-839-11	METAL CHIP	33K	5%	1/16W
R419	1-216-839-11	METAL CHIP	33K	5%	1/16W
R420	1-216-853-11	METAL CHIP	470K	5%	1/16W
R421	1-216-839-11	METAL CHIP	33K	5%	1/16W
R422	1-216-839-11	METAL CHIP	33K	5%	1/16W
R423	1-216-839-11	METAL CHIP	33K	5%	1/16W
R424	1-216-839-11	METAL CHIP	33K	5%	1/16W
R425	1-216-849-11	METAL CHIP	220K	5%	1/16W
R426	1-216-853-11	METAL CHIP	470K	5%	1/16W
R427	1-218-895-11	METAL CHIP	100K	0.5%	1/16W
R428	1-216-839-11	METAL CHIP	33K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R429	1-218-889-11	METAL CHIP	56K	0.5%	1/16W
R430	1-218-895-11	METAL CHIP	100K	0.5%	1/16W
R431	1-218-889-11	METAL CHIP	56K	0.5%	1/16W
R432	1-216-833-11	METAL CHIP	10K	5%	1/16W
R433	1-216-833-11	METAL CHIP	10K	5%	1/16W
R434	1-216-815-11	METAL CHIP	330	5%	1/16W
R435	1-216-833-11	METAL CHIP	10K	5%	1/16W
R436	1-216-809-11	METAL CHIP	100	5%	1/16W
R439	1-216-864-91	SHORT	0		
R507	1-216-809-11	METAL CHIP	100	5%	1/16W
R510	1-216-833-11	METAL CHIP	10K	5%	1/16W
R511	1-218-831-11	METAL CHIP	220	0.5%	1/16W
R512	1-218-831-11	METAL CHIP	220	0.5%	1/16W
R513	1-218-831-11	METAL CHIP	220	0.5%	1/16W
R514	1-218-831-11	METAL CHIP	220	0.5%	1/16W
R515	1-218-831-11	METAL CHIP	220	0.5%	1/16W
R516	1-218-831-11	METAL CHIP	220	0.5%	1/16W
R517	1-216-833-11	METAL CHIP	10K	5%	1/16W
R518	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R519	1-216-295-11	SHORT	0		
R521	1-216-295-11	SHORT	0		
R522	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R524	1-216-833-11	METAL CHIP	10K	5%	1/16W
R525	1-216-833-11	METAL CHIP	10K	5%	1/16W
R533	1-216-797-11	METAL CHIP	10	5%	1/16W
R554	1-216-797-11	METAL CHIP	10	5%	1/16W
R604	1-216-809-11	METAL CHIP	100	5%	1/16W
R710	1-216-864-91	SHORT	0		
R721	1-216-809-11	METAL CHIP	100	5%	1/16W
R724	1-216-833-11	METAL CHIP	10K	5%	1/16W
R726	1-216-833-11	METAL CHIP	10K	5%	1/16W
R741	1-216-833-11	METAL CHIP	10K	5%	1/16W
R801	1-216-864-91	SHORT	0		
R805	1-216-809-11	METAL CHIP	100	5%	1/16W
R809	1-216-797-11	METAL CHIP	10	5%	1/16W
R821	1-216-864-91	SHORT	0		

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description
RV501	1-223-583-11	RES, ADJ, CARBON 1K (VIDEO LEVEL ADJ)

< VIBRATOR >

Ref. No.	Part No.	Description
X101	1-795-174-11	VIBRATOR, CERAMIC (16.5 MHz)
X102	1-781-867-21	VIBRATOR, CRYSTAL (27 MHz)

MS-81 BOARD
****

(Ref.No. 1,000 Series)

< CONNECTOR >

Ref. No.	Part No.	Description
CN001	1-815-412-11	CONNECTOR, FFC/FPC 5P

< SWITCH >

Ref. No.	Part No.	Description
S001	1-786-133-11	SWITCH, ROTARY (CHUCK/TRAY DETECT)

Ref. No.	Part No.	Description
*	1-468-585-11	POWER BLOCK (HS13S0E) (AEP, UK, AR)

****

(Ref.No. 3,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description		Remark
⚠C101	1-115-165-11	FILM	0.1uF	250V
⚠C102	1-115-165-11	FILM	0.1uF	250V
⚠C103	1-127-942-11	CERAMIC	330PF	250V
⚠C104	1-127-942-11	CERAMIC	330PF	250V
⚠C107	1-127-942-11	CERAMIC	330PF	250V
C110	9-885-012-88	ELECT	47uF	400V
C115	1-130-483-11	FILM	0.01uF	50V
C116	1-130-483-11	FILM	0.01uF	50V
C117	1-130-477-11	FILM	0.0033uF	50V
C150	9-885-012-89	CERAMIC	47PF	2KV
C211	1-111-083-11	ELECT	150uF	35V
C213	1-126-947-11	ELECT	47uF	35V
C221	1-111-082-11	ELECT	100uF	35V
C223	1-126-947-11	ELECT	47uF	35V
C301	1-126-960-11	ELECT	1uF	50V
C311	1-111-087-11	ELECT	330uF	35V
C313	1-126-947-11	ELECT	47uF	35V
C314	1-126-965-11	ELECT	22uF	50V
C413	1-126-947-11	ELECT	47uF	35V
C414	1-130-483-11	FILM	0.01uF	50V
C511	1-111-082-11	ELECT	100uF	35V
C513	1-126-947-11	ELECT	47uF	35V
C611	1-111-087-11	ELECT	330uF	35V
C613	1-126-947-11	ELECT	47uF	35V
C711	1-126-947-11	ELECT	47uF	35V

< CONNECTOR >

Ref. No.	Part No.	Description
⚠CN101	1-580-230-11	CONNECTOR 2P
* CN201	1-778-318-21	CONNNECTOR 13P

< DIODE >

Ref. No.	Part No.	Description	
⚠D101	9-885-000-79	DIODE	S1WBA60
D102	8-719-160-78	DIODE	RD24FB2
D104	8-719-109-66	DIODE	RD3.3ES-B2
D105	9-903-904-01	DIODE	1SS270A
D211	8-719-018-84	DIODE	D2S6M
D212	8-719-160-87	DIODE	RD33FB2
D221	8-719-032-12	DIODE	D1NS6
D311	8-719-510-02	DIODE	D1NS4
D413	9-998-285-01	DIODE	D1N60
D511	8-719-063-69	DIODE	D2L20U
D611	8-719-510-02	DIODE	D1NS4
D621	8-719-064-11	DIODE	SPR-325MVW (ON/STANDBY)

< FUSE >

Ref. No.	Part No.	Description
⚠F101	1-532-388-31	FUSE (2A/250V)

< FUSE CLIP >

Ref. No.	Part No.	Description
FC1	9-885-012-77	FUSE CLIP
FC2	9-885-012-77	FUSE CLIP

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

POWER BLOCK (HS13S0E)

POWER BLOCK (HS13S0F)

Ref. No.	Part No.	Description		Remark
		< EARTH TERMINAL >		
FG101	1-537-738-21	TERMINAL, EARTH		
FG201	1-537-738-21	TERMINAL, EARTH		
		< IC >		
IC301	8-759-420-19	IC AN1431T		
IC411	8-759-420-19	IC AN1431T		
		< COIL >		
⚠L101	9-885-012-78	LINE FILTER	18mH	
⚠L102	9-885-012-78	LINE FILTER	18mH	
L150	9-885-012-79	BEAD CORE	120	
L211	9-885-012-80	COIL, CHOKE	39uH	
L221	9-885-012-81	COIL, CHOKE	100uH	
L311	9-885-012-80	COIL, CHOKE	39uH	
L511	9-885-012-81	COIL, CHOKE	100uH	
L611	9-885-012-80	COIL, CHOKE	39uH	
		<IC LINK >		
⚠P311	9-885-012-82	LINK, IC (1A/60V)		
⚠P611	9-885-012-82	LINK, IC (1A/60V)		
		< PHOT COUPLER >		
⚠PC101	8-749-011-50	PHOT COUPLER PS2561		
		< TRANSISTOR >		
Q101	9-885-006-12	TRANSISTOR	2SK2700	
Q102	8-729-023-98	TRANSISTOR	2SC3377	
Q211	9-885-005-96	TRANSISTOR	2SJ525	
Q311	9-885-006-08	TRANSISTOR	2SD1768S	
Q411	9-885-006-08	TRANSISTOR	2SD1768S	
Q611	9-885-006-08	TRANSISTOR	2SD1768S	
Q621	8-729-901-41	TRANSISTOR	2SC1740S	
Q622	8-729-029-92	TRANSISTOR	DTC143ES	
Q712	8-729-029-92	TRANSISTOR	DTC143ES	
		< RESISTOR >		
R101	1-219-776-11	CARBON	2.2M	1/2W
R105	1-219-774-11	CARBON	1M	1/2W
		< SWITCH >		
⚠SW101	9-885-012-83	SWITCH (POWER)		
		< TRANSFORMER >		
⚠T101	9-885-012-90	TRANSFORMER		

Ref. No.	Part No.	Description		Remark
*	1-468-586-11	POWER BLOCK (HS13S0F) (E, BR)		
		**********************		
				(Ref.No. 4,000 Series)
		< CAPACITOR >		
⚠C101	1-115-165-11	FILM	0.1uF	250V
⚠C103	1-127-942-11	CERAMIC	330PF	250V
⚠C104	1-127-942-11	CERAMIC	330PF	250V
⚠C107	1-127-942-11	CERAMIC	330PF	250V
C110	9-885-012-91	ELECT	150uF	400V
C112	9-885-012-92	FILM	0.047uF	630V
C113	9-885-012-89	CERAMIC	47PF	2KV
C115	1-130-489-11	FILM	0.033uF	50V
C116	1-130-483-11	FILM	0.01uF	50V
C117	1-130-477-11	FILM	0.0033uF	50V
C131	1-126-966-11	ELECT	33uF	50V
C132	1-126-960-11	ELECT	1uF	50V
C135	9-885-012-93	CERAMIC	3300PF	1KV
C137	9-885-012-94	FILM	0.1uF	50V
C211	1-111-083-11	ELECT	150uF	35V
C213	1-126-947-11	ELECT	47uF	35V
C221	1-111-082-11	ELECT	100uF	35V
C223	1-126-947-11	ELECT	47uF	35V
C311	9-885-012-95	ELECT	150uF	35V
C313	1-126-947-11	ELECT	47uF	35V
C314	1-126-965-11	ELECT	22uF	50V
C401	9-885-012-95	ELECT	150uF	35V
C402	1-126-959-11	ELECT	0.47uF	50V
C413	1-126-947-11	ELECT	47uF	35V
C511	1-111-082-11	ELECT	100uF	35V
C512	1-111-082-11	ELECT	100uF	35V
C611	9-885-012-95	ELECT	150uF	35V
C613	1-126-947-11	ELECT	47uF	35V
C701	1-126-963-11	ELECT	4.7uF	50V
C703	1-126-960-11	ELECT	1uF	50V
C711	1-126-947-11	ELECT	47uF	35V
		< CONNECTOR >		
⚠CN101	1-580-230-11	CONNECTOR 2P		
* CN201	1-778-318-21	CONNECTOR 13P		
		< DIODE >		
⚠D101	9-885-000-79	DIODE S1WBA60		
D102	8-719-160-78	DIODE RD24FB2		
D104	8-719-981-98	DIODE MTZJ-3.0B		
D105	9-903-904-01	DIODE 1SS270A		
D131	9-903-904-01	DIODE 1SS270A		
D132	8-719-922-11	DIODE MTZJ-22B		
D135	8-719-030-24	DIODE EG01C		
D211	8-719-018-84	DIODE D2S6M		
D212	8-719-160-87	DIODE RD33FB2		
D221	8-719-032-12	DIODE D1NS6		
D311	8-719-510-02	DIODE D1NS4		
D411	8-719-510-02	DIODE D1NS4		
D511	8-719-063-69	DIODE D2L20U		
D611	8-719-510-02	DIODE D1NS4		
D615	8-719-064-11	DIODE SPR-325MVW (ON/STANDBY)		
		< FUSE >		
⚠F101	1-532-503-31	FUSE (1.6A/250V)		
		< FUSE CLIP >		
FC1	9-885-012-77	FUSE CLIP		
FC2	9-885-012-77	FUSE CLIP		

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

POWER BLOCK (HS13S0F)

Ref. No.	Part No.	Description		Remark
		< EARTH TERMINAL >		
FG101	1-537-738-21	TERMINAL, EARTH		
FG201	1-537-738-21	TERMINAL, EARTH		
		< IC >		
IC131	9-885-005-97	IC MIP0254SPSCF		
IC401	8-759-667-11	IC HA17L431P		
IC701	8-759-420-19	IC AN1431T		
		< COIL >		
⚠L101	9-885-012-78	LINE FILTER	18mH	
⚠L102	9-885-012-78	LINE FILTER	18mH	
L150	9-885-012-96	BEAD CORE	45	
L211	9-885-012-80	COIL, CHOKE	39uH	
L221	9-885-012-81	COIL, CHOKE	100uH	
L311	9-885-012-81	COIL, CHOKE	100uH	
L411	9-885-012-80	COIL, CHOKE	39uH	
L511	9-885-012-81	COIL, CHOKE	100uH	
L611	9-885-012-81	COIL, CHOKE	100uH	
		<IC LINK >		
⚠P311	9-885-012-82	LINK, IC (1A/60V)		
⚠P611	9-885-012-82	LINK, IC (1A/60V)		
		< PHOTO COUPLER >		
⚠PC101	8-749-011-50	PHOTO COUPLER PS2561		
⚠PC103	8-749-011-50	PHOTO COUPLER PS2561		
⚠PC131	8-749-011-50	PHOTO COUPLER PS2561		
		< TRANSISTOR >		
Q101	9-885-006-10	TRANSISTOR	2SK2750	
Q102	8-729-023-98	TRANSISTOR	2SC3377	
Q103	9-885-006-10	TRANSISTOR	2SK2750	
Q131	9-885-006-08	TRANSISTOR	2SD1768S	
Q311	9-885-006-08	TRANSISTOR	2SD1768S	
Q621	8-729-901-41	TRANSISTOR	2SC1740S	
Q622	8-729-029-92	TRANSISTOR	DTC143ES	
Q712	8-729-029-92	TRANSISTOR	DTC143ES	
		< RESISTOR >		
R101	1-219-776-11	CARBON	2.2M	1/2W
R104	9-885-012-97	CARBON	680K	1/2W
		< SWITCH >		
⚠SW101	9-885-012-83	SWITCH (POWER)		
		< TRANSFORMER >		
⚠T101	9-885-012-98	TRANSFORMER		
⚠T131	9-885-012-99	TRANSFORMER		

POWER BLOCK (HS13S0U)

Ref. No.	Part No.	Description		Remark
*	1-468-583-11	POWER BLOCK (HS13S0U) (US, CND, MX)		
		**********************		
				(Ref.No. 5,000 Series)
		< CAPACITOR >		
⚠C101	1-115-165-11	FILM	0.1uF	250V
⚠C107	1-113-937-11	CERAMIC	2200PF	250V
C110	9-885-012-85	ELECT	120uF	200V
C115	1-130-489-11	FILM	0.033uF	50V
C116	1-130-483-11	FILM	0.01uF	50V
C117	1-130-477-11	FILM	0.0033uF	50V
C150	9-885-012-86	CERAMIC	470PF	1KV
C211	1-111-083-11	ELECT	150uF	35V
C213	1-126-947-11	ELECT	47uF	35V
C221	1-111-082-11	ELECT	100uF	35V
C223	1-126-947-11	ELECT	47uF	35V
C301	1-126-961-11	ELECT	2.2uF	50V
C311	1-111-087-11	ELECT	330uF	35V
C313	1-126-947-11	ELECT	47uF	35V
C314	1-126-965-11	ELECT	22uF	50V
C413	1-126-947-11	ELECT	47uF	35V
C414	1-130-483-11	FILM	0.01uF	50V
C511	1-111-082-11	ELECT	100uF	35V
C513	1-126-947-11	ELECT	47uF	35V
C611	1-111-087-11	ELECT	330uF	35V
C613	1-126-947-11	ELECT	47uF	35V
C711	1-126-947-11	ELECT	47uF	35V
		< CONNECTOR >		
⚠CN101	1-580-230-11	CONNECTOR 2P		
* CN201	1-778-318-21	CONNECTOR 13P		
		< DIODE >		
⚠D101	9-885-000-79	DIODE S1WBA60		
D104	8-719-062-66	DIODE HZS2C3-TE		
D105	9-903-904-01	DIODE 1SS270A		
D211	8-719-018-83	DIODE D2S4M		
D212	8-719-160-87	DIODE RD33FB2		
D221	8-719-510-02	DIODE D1NS4		
D311	8-719-510-02	DIODE D1NS4		
D413	9-998-285-01	DIODE D1N60		
D511	8-719-510-02	DIODE D1NS4		
D611	8-719-510-02	DIODE D1NS4		
D621	8-719-064-11	DIODE SPR-325MVW (ON/STANDBY)		
		< FUSE >		
⚠F101	1-533-296-11	FUSE (2A/125V)		
		< FUSE CLIP >		
FC1	9-885-012-77	FUSE CLIP		
FC2	9-885-012-77	FUSE CLIP		
		< EARTH TERMINAL >		
FG101	1-537-738-21	TERMINAL, EARTH		
FG201	1-537-738-21	TERMINAL, EARTH		

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

POWER BLOCK (HS13S0U)

Ref. No.	Part No.	Description		Remark
		< IC >		
IC301	8-759-420-19	IC AN1431T		
IC411	8-759-420-19	IC AN1431T		
		< COIL >		
⚠L101	9-885-012-78	LINE FILTER	18mH	
L150	9-885-012-79	BEAD CORE	120	
L211	9-885-012-80	COIL, CHOKE	39uH	
L221	9-885-012-81	COIL, CHOKE	100uH	
L311	9-885-012-80	COIL, CHOKE	39uH	
L511	9-885-012-81	COIL, CHOKE	100uH	
L611	9-885-012-80	COIL, CHOKE	39uH	
		<IC LINK >		
⚠P311	9-885-012-82	LINK, IC (1A/60V)		
⚠P611	9-885-012-82	LINK, IC (1A/60V)		
		< PHOT COUPLER >		
⚠PC101	9-995-566-01	PHOT COUPLER PS2501		
		< TRANSISTOR >		
Q101	9-885-006-10	TRANSISTOR	2SK2750	
Q102	8-729-023-98	TRANSISTOR	2SC3377	
Q211	9-885-005-96	TRANSISTOR	2SJ525	
Q311	9-885-006-08	TRANSISTOR	2SD1768S	
Q411	9-885-006-08	TRANSISTOR	2SD1768S	
Q611	9-885-006-08	TRANSISTOR	2SD1768S	
Q621	8-729-901-41	TRANSISTOR	2SC1740S	
Q622	8-729-029-92	TRANSISTOR	DTC143ES	
Q712	8-729-029-92	TRANSISTOR	DTC143ES	
		< SWITCH >		
⚠SW101	9-885-012-83	SWITCH (POWER)		
		< TRANSFORMER >		
⚠T101	9-885-012-87	TRANSFORMER		

POWER BLOCK (TOP-244U)

Ref. No.	Part No.	Description		Remark
*	1-468-584-11	POWER BLOCK (TOP-244U) (US, CND)		
		***********************		
				(Ref.No. 6,000 Series)
		< CAPACITOR >		
⚠C900	1-115-165-11	FILM	0.1uF	250V
⚠C901	1-113-920-51	CERAMIC	2200PF	250V
⚠C902	1-113-906-51	CERAMIC	330PF	250V
⚠C903	1-113-906-51	CERAMIC	330PF	250V
C910	1-107-401-11	ELECT	150uF	200V
⚠C911	9-885-013-00	FILM	0.01uF	400V
C912	9-885-013-01	FILM	0.1uF	50V
C913	9-885-013-02	ELECT	47uF	25V
C914	9-885-013-03	ELECT	10uF	50V
⚠C916	9-885-013-00	FILM	0.01uF	400V
C917	9-885-013-04	CERAMIC	4700PF	50V
C920	9-885-013-01	FILM	0.1uF	50V
C921	9-885-013-05	ELECT	470uF	25V
C922	9-885-013-04	CERAMIC	4700PF	50V
C924	9-885-013-05	ELECT	470uF	25V
C925	9-885-013-06	ELECT	100uF	25V
C926	9-885-013-01	FILM	0.1uF	50V
C927	9-885-013-07	ELECT	1000uF	16V
C929	9-885-013-06	ELECT	100uF	25V
C930	9-885-013-03	ELECT	10uF	50V
C931	9-885-013-06	ELECT	100uF	25V
C934	9-885-013-03	ELECT	10uF	50V
C936	9-885-013-02	ELECT	47uF	25V
C940	9-885-013-05	ELECT	470uF	25V
C941	9-885-013-05	ELECT	470uF	25V
C943	9-885-013-01	FILM	0.1uF	50V
C944	9-885-013-01	FILM	0.1uF	50V
C945	9-885-013-01	FILM	0.1uF	50V
C947	9-885-013-01	FILM	0.1uF	50V
		< CONNECTOR >		
⚠CN900	1-580-230-11	CONNECTOR 2P		
* CN920	1-778-318-21	CONNECTOR 13P		
		< DIODE >		
⚠D901	9-885-013-08	DIODE 1N4007		
⚠D902	9-885-013-08	DIODE 1N4007		
⚠D903	9-885-013-08	DIODE 1N4007		
⚠D904	9-885-013-08	DIODE 1N4007		
D910	9-885-013-09	DIODE UF4007		
D911	9-885-013-10	DIODE 1N4001		
D913	9-885-013-11	DIODE P6KE200A		
D920	9-885-013-12	DIODE UF202G		
D921	9-885-013-13	DIODE UF4003		
D922	9-885-013-14	DIODE UF5402G		
D923	9-885-013-13	DIODE UF4003		
D925	8-719-983-18	DIODE MTZJ-4.3A		
D926	9-885-013-10	DIODE 1N4001		
D927	9-885-013-10	DIODE 1N4001		
D928	9-885-013-10	DIODE 1N4001		
D929	8-719-064-11	DIODE SPR-325MVW (ON/STANDBY)		
D930	9-885-013-10	DIODE 1N4001		
D931	9-885-013-10	DIODE 1N4001		
D932	9-885-013-10	DIODE 1N4001		
D933	9-885-013-10	DIODE 1N4001		
		< EARTH TERMINAL >		
ET901	1-537-738-21	TERMINAL, EARTH		
ET902	1-537-738-21	TERMINAL, EARTH		
		< FUSE >		
⚠F900	1-533-296-11	FUSE (2A/125V)		
		< FUSE HOLDER >		
FH900	1-533-399-31	HOLDER, FUSE		
FH901	1-533-399-31	HOLDER, FUSE		
		< IC >		
⚠IC910	9-885-013-15	IC TOP-244Y		
IC920	9-885-013-16	IC TL431A		

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

POWER BLOCK (TOP-244U)

Ref. No.	Part No.	Description		Remark
		< COIL >		
L921	9-885-013-17	COIL, CHOKE	11.3uH	
L922	9-885-013-17	COIL, CHOKE	11.3uH	
L923	9-885-013-17	COIL, CHOKE	11.3uH	
L924	9-885-013-17	COIL, CHOKE	11.3uH	
		< LINE FILTER >		
⚠LF900	1-416-929-11	COIL, CHOKE	2.3mH	
		< PHOT COUPLER >		
⚠PC910	8-749-010-65	PHOT COUPLER PC123FY2		
⚠PC911	8-749-010-65	PHOT COUPLER PC123FY2		
		<IC LINK >		
⚠PS922	1-533-590-31	LINK, IC (1A)		
⚠PS923	1-533-591-31	LINK, IC (1.25A)		
		< TRANSISTOR >		
Q922	8-929-029-67	TRANSISTOR	DTC114ESA-TP	
Q923	8-729-113-33	TRANSISTOR	2SB733-4	
Q924	8-729-012-32	TRANSISTOR	2SC4040-TL2-R	
Q925	8-729-012-32	TRANSISTOR	2SC4040-TL2-R	
Q927	8-729-012-32	TRANSISTOR	2SC4040-TL2-R	
Q928	8-729-018-57	TRANSISTOR	DTA114GSTP	
Q929	8-729-925-12	TRANSISTOR	2SC1740SLN-TP-RS	
Q930	8-929-029-67	TRANSISTOR	DTC114ESA-TP	
		< RESISTOR >		
R900	1-260-364-91	CARBON	1M	1/2W
R911	1-247-779-91	CARBON	6.8	1/4W
R917	1-247-863-91	CARBON	22K	1/4W
R921	1-247-831-91	CARBON	1K	1/4W
R922	1-247-807-91	CARBON	100	1/4W
R925	1-247-799-91	CARBON	47	1/4W
R926	1-247-831-91	CARBON	1K	1/4W
R927	1-247-859-91	CARBON	15K	1/4W
R928	1-247-851-91	CARBON	6.8K	1/4W
R930	1-247-855-91	CARBON	10K	1/4W
R931	1-216-430-51	CARBON	390	1W
R932	1-247-879-91	CARBON	100K	1/4W
R933	1-247-851-91	CARBON	6.8K	1/4W
R934	1-247-811-91	CARBON	150	1/4W
R935	1-247-795-91	CARBON	33	1/4W
R936	1-247-851-91	CARBON	6.8K	1/4W
R938	1-247-811-91	CARBON	150	1/4W
R940	1-247-815-91	CARBON	220	1/4W
R947	1-247-815-91	CARBON	220	1/4W
R948	1-247-831-91	CARBON	1K	1/4W
R949	1-247-863-91	CARBON	22K	1/4W
		< SWITCH >		
⚠SW911	9-885-012-83	SWITCH (POWER)		

Ref. No.	Part No.	Description	Remark
		< TRANSFORMER >	
⚠T910	9-885-013-18	TRANSFORMER	

MISCELLANEOUS
****

Ref. No.	Part No.	Description	Remark
9	1-786-131-11	SWITCH, TACTILE	
* 51	1-468-583-11	POWER BLOCK (HS13S0U) (US, CND, MX)	
* 51	1-468-584-11	POWER BLOCK (TOP-244U) (US, CND)	
* 51	1-468-585-11	POWER BLOCK (HS13S0E) (AEP, UK, AR)	
* 51	1-468-586-11	POWER BLOCK (HS13SOF) (E, BR)	
⚠56	1-757-140-11	CORD, POWER (AEP, UK, E, BR)	
⚠56	1-757-571-11	CORD, POWER (US, CND, MX)	
⚠56	1-757-901-11	CORD, POWER (AR)	
61	1-757-696-11	CABLE, FLEXIBLE FLAT (FMA-024)	
62	1-757-695-11	CABLE, FLEXIBLE FLAT (FMA-023)	
63	1-757-693-11	CABLE, FLEXIBLE FLAT (FMO-001)	
64	1-757-694-11	CABLE, FLEXIBLE FLAT (FMO-002)	
65	1-757-697-11	CABLE, FLEXIBLE FLAT (FMM-035)	
72	1-757-699-11	CABLE, FLEXIBLE FLAT (FAE-005) (AEP, UK)	
⚠104	A-4900-634-A	OPTICAL PICK-UP KHM-240 AAA/J1NP	
M001	1-541-632-11	MOTOR, DC (LOADING)	

ACCESSORIES & PACKING MATERIALS
****

Ref. No.	Part No.	Description
	1-476-604-11	REMOTE COMMANDER (RMT-D128A) (US, CND, E, MX, AR, BR)
	1-476-605-11	REMOTE COMMANDER (RMT-D128P) (AEP, UK)
⚠	1-569-008-21	ADAPTOR, CONVERSION 2P (E)
	1-751-271-12	CORD, CONNECTION (STEREO AV CABLE 1.5m) (US, CND, AEP, UK (DPX1411BM), E, MX)
⚠	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (UK)
	3-067-120-11	MANUAL, INSTRUCTION (ENGLISH) (US, CND)
	3-067-120-21	MANUAL, INSTRUCTION (FRENCH) (CND)
	3-067-120-31	MANUAL, INSTRUCTION (SPANISH) (E, MX, BR)
	3-067-120-41	MANUAL, INSTRUCTION (ENGLISH) (UK)
	3-067-120-51	MANUAL, INSTRUCTION (FRENCH) (AEP (DPX1411BM), AEP (DPX1411HM))
	3-067-120-61	MANUAL, INSTRUCTION (GERMAN) (AEP (DPX1411BM), AEP (DPX1411HM))
	3-067-120-71	MANUAL, INSTRUCTION (ITALIAN) (AEP)
	3-067-120-81	MANUAL, INSTRUCTION (DUTCH) (AEP (DPX1411BM), AEP (DPX1411HM))
	3-067-121-11	MANUAL, INSTRUCTION (SPANISH) (AEP (DPX1412BM), AEP (DPX1412HM))
	3-067-121-21	MANUAL, INSTRUCTION (PORTUGUESE) (AEP (DPX1412BM), AEP (DPX1412HM))
	3-067-121-31	MANUAL, INSTRUCTION (DANISH) (AEP (DPX1412BM), AEP (DPX1412HM))
	3-067-121-41	MANUAL, INSTRUCTION (FINNISH) (AEP (DPX1412BM), AEP (DPX1412HM))
	3-067-121-51	MANUAL, INSTRUCTION (SWEDISH) (AEP (DPX1412BM), AEP (DPX1412HM))

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Sony Corporation
Network Entertainment Group

2001C0500-1
© 2001. 3
Published by Quality Assurance Dept.